

GradSchoolNet: ROBUST END-TO-END *-SHOT UNSUPERVISED DEEPAF NEURAL ATTENTION MODEL FOR CONVEXLY OPTIMAL (ARTIFICIALLY INTELLIGENT) SUCCESS IN COMPUTER VISION RESEARCH

Divam Gupta & Varun Jain *

Robotics Institute

Cranberry-Lemon University

Pittsburgh, PA 15213, USA

{divamg, varunjai}@andrew.cmu.edu

ABSTRACT

We present *GradSchoolNet*, a Novel Robust End-to-end *-Shot Unsupervised DeepAF Neural Attention Model for Convexly Optimal (Artificially Intelligent) Success in Computer Vision Research. Yes, our model does give you success. Our novel proposed model archives the state-of-the performance on the Computer Vision Research Success Challenge dataset.

1 INTRODUCTION

Insert abstract again but with more meaningless jargon.

2 METHODOLOGY

Our approach is very simple and highly intuitive. For any given dataset from the vision community, we find the paper that achieves state-of-the-art performance on the dataset. Irrespective, *GradSchoolNet* achieves 0.01% better performance across metrics.

3 EXPERIMENTS

All our experiments can be found in the supplementary material (Luckily there is no deadline for supplementary).

We compare our model with all computer vision models which use deep learning.

4 IMPLEMENTATION DETAILS

How do you thing our model achieves the state-of-the-art?

Talk is cheap, show me the code.

Algorithm 1 Our novel algorithm

Input : Dataset **X**

Output $\max\{Related\ Work\} + abs(\mathcal{N}(0, 0.01))$

*both authors are 3rd authors.

5 RELATED WORK

Thankfully there is no page limit for references. We found that the following are very similar to our work. To the best of our knowledge, none of the previous work solve the problem in the exact same manner as we do. Li et al. (2019), Kim et al. (2019), Gidaris & Komodakis (2019), Wang et al. (2019), Hein et al. (2019), Tsuzuku & Sato (2019), Qiao et al. (2019), Zheng et al. (2019), Liu et al. (2019), Yoo & Kweon (2019), Khan et al. (2019), Cubuk et al. (2019), Le et al. (2019), Schops et al. (2019), Pittaluga et al. (2019), Nam et al. (2019), Park et al. (2019), Srinivasan et al. (2019), Zhang et al. (2019), Tonioni et al. (2019), Kim et al. (2019), Zhao et al. (2019), Trager et al. (2019), Han et al. (2019), Girdhar et al. (2019), Hussein et al. (2019), Yang et al. (2019), Sun et al. (2019), Wu et al. (2019), Li et al. (2019), Parmar & Morris (2019), Xu et al. (2019), Gao & Grauman (2019), Wang et al. (2019), Long et al. (2019), Bhardwaj et al. (2019), Yang et al. (2019), Wu et al. (2019), Tchapmi et al. (2019), Sun et al. (2019), Sun et al. (2019), Zhuang et al. (2019), Pang et al. (2019), Chen et al. (2019), Shao et al. (2019), Rao et al. (2019), Tripathi et al. (2019), Sanakoyeu et al. (2019), Abati et al. (2019), Kurmi et al. (2019), Xie et al. (2019), Li et al. (2019), Mehta et al. (2019), Liu et al. (2019), Fang et al. (2019), Zhang et al. (2019), He et al. (2019), Wang et al. (2019), He et al. (2019), He et al. (2019), Zhong et al. (2019), Sun et al. (2019), Wang et al. (2019), Chen et al. (2019), Liu et al. (2019), Durand et al. (2019), Rezaatofighi et al. (2019), Zhang et al. (2019), Pang et al. (2019), Zhu et al. (2019), Shen et al. (2019), Yu & Grauman (2019), Song et al. (2019), Guo et al. (2019), Bai et al. (2019), Zhuo et al. (2019), Meng et al. (2019), Shi et al. (2019), RoyChowdhury et al. (2019), Chen et al. (2019), Huang et al. (2019), Munjal et al. (2019), Pang et al. (2019), Hou et al. (2019), Zhu et al. (2019), Zhou et al. (2019), Liu et al. (2019), Hung et al. (2019), Yang et al. (2019), Zhang et al. (2019), Yang et al. (2019), Mo et al. (2019), Zhang et al. (2019), Probst et al. (2019), Gurari et al. (2019), Duan et al. (2019), Wu et al. (2019), Lin et al. (2019), Poggi et al. (2019), Zhu et al. (2019), Lan et al. (2019), Zhao et al. (2019), Li et al. (2019), Yu & Grauman (2019), Wang et al. (2019), Sun et al. (2019), Liu et al. (2019), Baek et al. (2019), Kocabas et al. (2019), Yang et al. (2019), Zhou et al. (2019), Tang & Wu (2019), Wang et al. (2019), Tran et al. (2019), Zhao et al. (2019), Li et al. (2019), Gecer et al. (2019), Abavisani et al. (2019), Alldieck et al. (2019), Wu et al. (2019), Aakur & Sarkar (2019), Tang & Wu (2019), Liu et al. (2019), Si et al. (2019), Zhong et al. (2019), Zhang et al. (2019), Xiong et al. (2019), Shou et al. (2019), Wu et al. (2019), Feng et al. (2019), Liu et al. (2019), Wang et al. (2019), He et al. (2019), Wang et al. (2019), Kart et al. (2019), Sadeghian et al. (2019), Giancola et al. (2019), Li et al. (2019), Xu et al. (2019), Yang et al. (2019), Wang et al. (2019), Nam et al. (2019), Wang et al. (2019), Mao et al. (2019), Zheng et al. (2019), Wang et al. (2019), Alharbi et al. (2019), Yao et al. (2019), Huh et al. (2019), Zeng et al. (2019), Wang et al. (2019), Qiao et al. (2019), Wengrowski & Dana (2019), Li et al. (2019), Afifi et al. (2019), Tsai et al. (2019), Punnapurath & Brown (2019), Gutierrez-Barragan et al. (2019), Hu et al. (2019), Xie et al. (2019), Xue et al. (2019), Gu et al. (2019), Takeda et al. (2019), Feng et al. (2019), Li et al. (2019), Xue et al. (2019), Chen et al. (2019), Yang et al. (2019), Zhang et al. (2019), Akkaynak & Treibitz (2019), Wang et al. (2019), Pan et al. (2019), Guo et al. (2019), Xu et al. (2019), He et al. (2019), Chen et al. (2019), Yan et al. (2019), Dong & Yang (2019), Shi et al. (2019), Wang et al. (2019), Chen et al. (2019), Dwibedi et al. (2019), Kwon & Park (2019), Lian et al. (2019), Wang et al. (2019), Chen et al. (2019), Maninis et al. (2019), Cakir et al. (2019), Liu et al. (2019), Zhan et al. (2019), Lai et al. (2019), Chang et al. (2019), Wei et al. (2019), Kolesnikov et al. (2019), Haurilet et al. (2019), Teney & Hengel (2019), Liu et al. (2019), Wang et al. (2019), Gu et al. (2019), Song et al. (2019), Cadene et al. (2019), Fan et al. (2019), Krishna et al. (2019), Xu et al. (2019), Suris et al. (2019), Schwartz et al. (2019), Zhang et al. (2019), Zhan et al. (2019), Manhardt et al. (2019), Zhou et al. (2019), Matejek et al. (2019), Wu et al. (2019), Ni et al. (2019), Miao et al. (2019), Krull et al. (2019), Zheng et al. (2019), Yu & Grauman (2019), Yan et al. (2019), Sariyildiz & Cinbis (2019), Dey et al. (2019), Pal & Balasubramanian (2019), Wan et al. (2019), Ahn et al. (2019), Choe & Shim (2019), Carlucci et al. (2019), Pan et al. (2019), Chen et al. (2019), Wang et al. (2019), Zhu et al. (2019), Lee et al. (2019), Kim et al. (2019), Yang et al. (2019), Oza & Patel (2019), Bansal et al. (2019), Yin et al. (2019), Park et al. (2019), Zhu et al. (2019), Song et al. (2019), Flynn et al. (2019), Siarohin et al. (2019), Shysheya et al. (2019), Peleg et al. (2019), Chen et al. (2019), Tang & Wu (2019), Fu et al. (2019), Sitzmann et al. (2019), Azinovic et al. (2019), Alayrac et al. (2019), Kaneko et al. (2019), Gong et al. (2019), Lee et al. (2019), Xu et al. (2019), Luo et al. (2019), Vu et al. (2019), Luo et al. (2019), Liu et al. (2019), Zhang et al. (2019), Schuster et al. (2019), Wang et al. (2019), Zhang et al. (2019), Roy & Boddeti (2019), Tung et al. (2019), Liu et al. (2019), Avetisyan et al. (2019), Chen et al. (2019), Qiao

et al. (2019), Wang et al. (2019), Li et al. (2019), Kornblith et al. (2019), Tran et al. (2019), Li et al. (2019), Liu et al. (2019), Tang & Wu (2019), Kim et al. (2019), You et al. (2019), Xie et al. (2019), Zhang et al. (2019), Chen et al. (2019), Dovrat et al. (2019), Zhang et al. (2019), Zhao et al. (2019), Lin et al. (2019), Li et al. (2019), Li et al. (2019), Tan et al. (2019), Ye et al. (2019), He et al. (2019), Ding et al. (2019), Yang et al. (2019), Jiao et al. (2019), Collomosse et al. (2019), He et al. (2019), Perera et al. (2019), Yu & Grauman (2019), Yang et al. (2019), Liu et al. (2019), Yu & Grauman (2019), Yang et al. (2019), Zhang et al. (2019), Wang et al. (2019), Liang et al. (2019), Cao et al. (2019), Zhu et al. (2019), Hu et al. (2019), Qi et al. (2019), Gao & Grauman (2019), Ge et al. (2019), Morgado & Vasconcelos (2019), Tang & Wu (2019), Wang et al. (2019), Choy et al. (2019), Zhao et al. (2019), Zhang et al. (2019), Hu et al. (2019), Zhu et al. (2019), Tian et al. (2019), Song et al. (2019), Fu et al. (2019), Yu & Grauman (2019), Mehrasa et al. (2019), Vongkulbhisal et al. (2019), Deza et al. (2019), Marino et al. (2019), Gao & Grauman (2019), Branchaud-Charron et al. (2019), Liu et al. (2019), Lou et al. (2019), Deng et al. (2019), Gu et al. (2019), Kasten et al. (2019), Guo et al. (2019), Nie et al. (2019), Nousias et al. (2019), Sattler et al. (2019), Qiu et al. (2019), Yang et al. (2019), Xu et al. (2019), Wang et al. (2019), Yang et al. (2019), Yang et al. (2019), Atapour-Abarghouei & Breckon (2019), Hu et al. (2019), Arnab et al. (2019), Tatarchenko et al. (2019), Duan et al. (2019), Zhao et al. (2019), Gu et al. (2019), Ming et al. (2019), Zhang et al. (2019), Liu et al. (2019), Marin-Jimenez et al. (2019), Zhu et al. (2019), Ginossar et al. (2019), Yang et al. (2019), Zhang et al. (2019), Wang et al. (2019), Zhukov et al. (2019), Chang et al. (2019), Wang et al. (2019), Liu et al. (2019), Farha & Gall (2019), Li et al. (2019), Li et al. (2019), Liu et al. (2019), Ma et al. (2019), Lu et al. (2019), Yang et al. (2019), Wang et al. (2019), Zhan et al. (2019), Zhou et al. (2019), Liu et al. (2019), Shen et al. (2019), Li et al. (2019), Bao et al. (2019), Wu et al. (2019), Xu et al. (2019), Pan et al. (2019), Wang et al. (2019), Lei & Chen (2019), Zhang et al. (2019), Wen et al. (2019), Hui et al. (2019), Muralikrishnan et al. (2019), Yu & Grauman (2019), Li et al. (2019), Wang et al. (2019), He et al. (2019), Li et al. (2019), Gao & Grauman (2019), Rebecq et al. (2019), Li et al. (2019), Wei et al. (2019), Sekikawa et al. (2019), Haris et al. (2019), Wu et al. (2019), Liu et al. (2019), Zhao et al. (2019), Ren et al. (2019), Yi et al. (2019), Qi et al. (2019), Park et al. (2019), Li et al. (2019), Gong et al. (2019), He et al. (2019), Wang et al. (2019), Yoshihashi et al. (2019), et al. (2019), Wan et al. (2019), Zhou et al. (2019), Hwang et al. (2019), Yang et al. (2019), Xu et al. (2019), Revaud et al. (2019), Wang et al. (2019), Zhang et al. (2019), Rezanejad et al. (2019), Feng et al. (2019), Xu et al. (2019), Yang et al. (2019), Abbasnejad et al. (2019), Pu et al. (2019), Dogan et al. (2019), Liu et al. (2019), Wang et al. (2019), Guo et al. (2019), Zuo et al. (2019), Shen et al. (2019), Tian et al. (2019), Huang et al. (2019), Abolghasemi et al. (2019), Kim et al. (2019), Liu et al. (2019), Li et al. (2019), Park et al. (2019), Zeng et al. (2019), Dong & Yang (2019), Rony et al. (2019), Barron (2019), He et al. (2019), Jung et al. (2019), Sun et al. (2019), Halimi et al. (2019), Kim et al. (2019), Ghasedi et al. (2019), Karras et al. (2019), Avraham et al. (2019), Hou et al. (2019), Zhang et al. (2019), Huang et al. (2019), Liu et al. (2019), Mescheder et al. (2019), Shen et al. (2019), Natsume et al. (2019), Zhu et al. (2019), Kolotouros et al. (2019), Tekin et al. (2019), Li et al. (2019), Yang et al. (2019), Tang & Wu (2019), Zhuang et al. (2019), Peng et al. (2019), Liu et al. (2019), Lv et al. (2019), Zhang et al. (2019), Yoon et al. (2019), Yeh et al. (2019), Raaj et al. (2019), Melzi et al. (2019), Maksai & Fua (2019), Gao & Grauman (2019), Danelljan et al. (2019), Dai et al. (2019), Liu et al. (2019), Deng et al. (2019), Zhang et al. (2019), Zhang et al. (2019), Ouderaa & Worrall (2019), He et al. (2019), Diaz & Marathe (2019), Cheng et al. (2019), Corneanu et al. (2019), Bhunia et al. (2019), Qiu et al. (2019), Chen et al. (2019), Shevlev & Avidan (2019), Guo et al. (2019), Yuan et al. (2019), Liu et al. (2019), Singh et al. (2019), Alcorn et al. (2019), Li et al. (2019), Jia et al. (2019), Huang et al. (2019), Ghosh et al. (2019), Kang et al. (2019), Kumawat & Raman (2019), Zhao et al. (2019), Zhu et al. (2019), Wang et al. (2019), Ding et al. (2019), Orekondy et al. (2019), Duan et al. (2019), Chen et al. (2019), Lee et al. (2019), Chen et al. (2019), Li et al. (2019), Zheng et al. (2019), Wang et al. (2019), Zhang et al. (2019), Klein & Wolf (2019), Li et al. (2019), Li et al. (2019), Iscen et al. (2019), Wang et al. (2019), Dutta & Akata (2019), Liu et al. (2019), Teichmann et al. (2019), Chen et al. (2019), Zhan et al. (2019), Dhar et al. (2019), Guo et al. (2019), Chen et al. (2019), Zheng et al. (2019), Chen et al. (2019), Liu et al. (2019), Karlinsky et al. (2019), Wang et al. (2019), Zhang et al. (2019), Goldman et al. (2019), Qi et al. (2019), Oh et al. (2019), Ling et al. (2019), Lee et al. (2019), Ventura et al. (2019), Wang et al. (2019), Jang & Kim (2019), Shi et al. (2019), Zhang et al. (2019), Xie et al. (2019), Ge et al. (2019), Kumar (2019), Gupta et al. (2019), Gygli & Ferrari (2019), Fan et al. (2019), Shugrina et al. (2019), Tan et al. (2019), Blanchard et al. (2019), Zaeemzadeh et al. (2019), Li et al. (2019), Ye et al. (2019), Cheng et al. (2019),

Song et al. (2019), Li et al. (2019), Zhang et al. (2019), Xu et al. (2019), Speciale et al. (2019), Yu & Grauman (2019), Yang et al. (2019), Yao et al. (2019), Li et al. (2019), Gojcic et al. (2019), Wang et al. (2019), Zhao et al. (2019), Dai et al. (2019), Agresti et al. (2019), Cao et al. (2019), Chen et al. (2019), Kanazawa et al. (2019), Liu et al. (2019), Weinzaepfel et al. (2019), Wong & Soatto (2019), Lin et al. (2019), Jin et al. (2019), Su et al. (2019), Vemulapalli & Agarwala (2019), Sun et al. (2019), Yin et al. (2019), Chen et al. (2019), Liang et al. (2019), Zheng et al. (2019), Zhou et al. (2019), Hur & Roth (2019), Wei et al. (2019), Mu et al. (2019), Sun et al. (2019), Kim et al. (2019), Zhu et al. (2019), Hoshen et al. (2019), Eghbal-zadeh et al. (2019), Liu et al. (2019), Xiong et al. (2019), Tomei et al. (2019), Zhang et al. (2019), Men et al. (2019), Park et al. (2019), Wang et al. (2019), Sarmad et al. (2019), Weng et al. (2019), LeGendre et al. (2019), Kokkinos & Lefkimmatis (2019), Chen et al. (2019), Zeng et al. (2019), Yifan et al. (2019), Wang et al. (2019), Zhang et al. (2019), Lv et al. (2019), Lu et al. (2019), Wang et al. (2019), Bapat & Frahm (2019), Zhang et al. (2019), Pan et al. (2019), Yin et al. (2019), Jia et al. (2019), Liu et al. (2019), Zeng et al. (2019), Jia et al. (2019), Lange et al. (2019), Fan et al. (2019), Yuan et al. (2019), Wang et al. (2019), Jiang et al. (2019), Li et al. (2019), Zeng et al. (2019), Chen et al. (2019), Liu et al. (2019), Ritchie et al. (2019), Ding et al. (2019), Spencer et al. (2019), Ye et al. (2019), Li et al. (2019), Wang et al. (2019), Yin et al. (2019), Chu et al. (2019), Zhang et al. (2019), Kim et al. (2019), Yu & Grauman (2019), Liao et al. (2019), Gao & Grauman (2019), Yu & Grauman (2019), Li et al. (2019), Li et al. (2019), Cheng et al. (2019), Tian et al. (2019), Wang et al. (2019), Cui et al. (2019), Fang et al. (2019), Lu et al. (2019), Kirillov et al. (2019), Huang et al. (2019), Xu et al. (2019), Murrugarra-Llerena & Kovashka (2019), Vo et al. (2019), Wang et al. (2019), Liu et al. (2019), Liu et al. (2019), Ribera et al. (2019), Singh et al. (2019), Wu et al. (2019), Niitani et al. (2019), Shi et al. (2019), Raff et al. (2019), Xie et al. (2019), Alfassy et al. (2019), Wertheimer & Hariharan (2019), Mancini et al. (2019), Zhou et al. (2019), Mun et al. (2019), Park et al. (2019), Wu et al. (2019), Tang & Wu (2019), Wang et al. (2019), Gao & Grauman (2019), Shah et al. (2019), Wijmans et al. (2019), Zheng et al. (2019), Niu et al. (2019), Jain et al. (2019), Hudson & Manning (2019), Tan et al. (2019), Zellers et al. (2019), Ma et al. (2019), Ke et al. (2019), Wortsman et al. (2019), Ingle et al. (2019), Gupta et al. (2019), Lindell et al. (2019), Chen et al. (2019), Xin et al. (2019), Huang et al. (2019), Pan et al. (2019), Purohit et al. (2019), Brooks & Barron (2019), Wang et al. (2019), Hertz et al. (2019), He et al. (2019), Meshry et al. (2019), He et al. (2019), Xiao et al. (2019), Garon et al. (2019), Song et al. (2019), Hold-Geoffroy et al. (2019), Li et al. (2019), Yuan et al. (2019), Saito et al. (2019), Perez-Rua et al. (2019), Stutz et al. (2019), Theagarajan et al. (2019), Sun et al. (2019), Liu et al. (2019), Yi et al. (2019), Li et al. (2019), Ghiasi et al. (2019), Li et al. (2019), Paul et al. (2019), Inkawhich et al. (2019), Jack et al. (2019), Georgiadis (2019), Liu et al. (2019), Zhang et al. (2019), Wei et al. (2019), Liu et al. (2019), Tay et al. (2019), Makansi et al. (2019), Xu et al. (2019), Aoki et al. (2019), Wang et al. (2019), Hou et al. (2019), Liu et al. (2019), Liu et al. (2019), Li et al. (2019), Shakeri & Zhang (2019), Brazil & Liu (2019), Chen et al. (2019), Suh et al. (2019), Li et al. (2019), Liu et al. (2019), Shi et al. (2019), Wang et al. (2019), Aziere & Todorovic (2019), Yang et al. (2019), Peng et al. (2019), Reddy et al. (2019), Pang et al. (2019), Liang et al. (2019), Chang et al. (2019), Lu et al. (2019), Zhang et al. (2019), Thoma et al. (2019), Cao et al. (2019), Li et al. (2019), Barnea & Ben-Shahar (2019), Komarichev et al. (2019), Cheng et al. (2019), Landrieu & Boussaha (2019), Gong et al. (2019), Magri & Fusiello (2019), Zheng et al. (2019), Qin et al. (2019), Lin et al. (2019), Wang et al. (2019), Sun et al. (2019), He et al. (2019), Cosmo et al. (2019), Oh et al. (2019), Kim et al. (2019), Alamri et al. (2019), Li et al. (2019), Koyamatsu et al. (2019), Zhu et al. (2019), Otani et al. (2019), Sawatzky et al. (2019), Qin et al. (2019), Riegler et al. (2019), Donne & Geiger (2019), Li et al. (2019), Camposeco et al. (2019), Yi et al. (2019), Qi et al. (2019), Gur & Wolf (2019), Li et al. (2019), Rhodin et al. (2019), Dong & Yang (2019), Najibi et al. (2019), Zhao et al. (2019), Xiong et al. (2019), Pavllo et al. (2019), Sanyal et al. (2019), Moon et al. (2019), Wandt & Rosenhahn (2019), Dong & Yang (2019), Ding et al. (2019), Zhong et al. (2019), Kossaiifi et al. (2019), Chen et al. (2019), Ionescu et al. (2019), Perrett & Damen (2019), Doughty et al. (2019), Li et al. (2019), Crasto et al. (2019), Azar et al. (2019), Rochan & Wang (2019), Shi et al. (2019), Yan et al. (2019), Li et al. (2019), Voigtlaender et al. (2019), Fan et al. (2019), Behl et al. (2019), Hu et al. (2019), Zhang et al. (2019), Liu et al. (2019), Papadopoulos et al. (2019), Wu et al. (2019), Hu et al. (2019), Wang et al. (2019), Dansereau et al. (2019), Zhang et al. (2019), Qian et al. (2019), Wang et al. (2019), Huang et al. (2019), Dusmanu et al. (2019), Nah et al. (2019), Jin et al. (2019), Soh et al. (2019), Shen et al. (2019), Yang et al. (2019), Wu et al. (2019), Qu et al. (2019), Korhonen (2019), Wei et al. (2019), Wang et al. (2019), Wang et al. (2019), Zisselman et al. (2019), Shetty et al. (2019), Quadrianto

et al. (2019), Araslanov et al. (2019), Schonfeld et al. (2019), Xian et al. (2019), Ma et al. (2019), Porzi et al. (2019), Vo et al. (2019), Zhang et al. (2019), Cornia et al. (2019), Singh et al. (2019), Zhang et al. (2019), Kim et al. (2019), Pei et al. (2019), Xiong et al. (2019), Qin et al. (2019), Shi et al. (2019), Noh et al. (2019), Zheng et al. (2019), Yasarla & Patel (2019), Chen et al. (2019), Meirovitch et al. (2019), Hu et al. (2019), Wang et al. (2019), Hong et al. (2019), Niethammer et al. (2019), Li et al. (2019), Chandra et al. (2019), Qiu et al. (2019), Xie et al. (2019), Zheng et al. (2019), Yan et al. (2019), Hou et al. (2019), Zhao et al. (2019), Fan et al. (2019), Huang et al. (2019), Xue et al. (2019), Zhao et al. (2019), Kanehira et al. (2019), Kanehira et al. (2019), Wang et al. (2019), Korus & Memon (2019), Trunz et al. (2019), Li et al. (2019), Ding et al. (2019), Zeng et al. (2019), Han et al. (2019), Chen et al. (2019), Fan et al. (2019), Zhi et al. (2019), Brahmabhatt et al. (2019), Li et al. (2019), Probst et al. (2019), Chen et al. (2019), Chang et al. (2019), Yin et al. (2019), Dubey et al. (2019), Stojanov et al. (2019), Wu et al. (2019), Tang & Wu (2019), Zadeh et al. (2019), Xiong et al. (2019), Pham et al. (2019), Neven et al. (2019), Hsu et al. (2019), Zhu et al. (2019), Jain et al. (2019), Wang et al. (2019), Ding et al. (2019), Liu et al. (2019), Zhao et al. (2019), Griffin & Corso (2019), Chen et al. (2019), Sarfraz et al. (2019), Liang et al. (2019), Johnander et al. (2019), Puy & Perez (2019), Gao & Grauman (2019), Amodio & Krishnaswamy (2019), Xu et al. (2019), Xue et al. (2019), Kim et al. (2019), Guo et al. (2019), Seo et al. (2019), Suganuma et al. (2019), Wang et al. (2019), Ren et al. (2019), Wu et al. (2019), Moosavi-Dezfooli et al. (2019), Modas et al. (2019), Wagner et al. (2019), Lemaire et al. (2019), Lin et al. (2019), Nekrasov et al. (2019), Xiang et al. (2019), Li et al. (2019), Wang et al. (2019), Ahn et al. (2019), Chen et al. (2019), Lee et al. (2019), Mehta et al. (2019), Derakhshani et al. (2019), Gong et al. (2019), Xu et al. (2019), Ho et al. (2019), Chen et al. (2019), Hu et al. (2019), Lifchitz et al. (2019), Cui et al. (2019), Shen et al. (2019), Herath et al. (2019), Xu et al. (2019), Zhu et al. (2019), Hou et al. (2019), Hamaguchi et al. (2019), Wang et al. (2019), Dong & Yang (2019), Cai et al. (2019), Baek et al. (2019), Hosu et al. (2019), Xie et al. (2019), Mukundan et al. (2019), Kirillov et al. (2019), Singh et al. (2019), Chang et al. (2019), Arun et al. (2019), Su et al. (2019), Zhang et al. (2019), Kim et al. (2019), Roy & Boddeti (2019), Voigtlaender et al. (2019), Yu & Grauman (2019), Dmitriev & Kaufman (2019), Liang et al. (2019), Li et al. (2019), Larsson et al. (2019), Wu et al. (2019), Hascoet et al. (2019), Manjunatha et al. (2019), Li et al. (2019), Li et al. (2019), Bergmann et al. (2019), Koch et al. (2019), Liu et al. (2019), Wu et al. (2019), Lei & Chen (2019), Yokozuka et al. (2019), Wei et al. (2019), Tonioni et al. (2019), Li et al. (2019), Kukulova & Larsson (2019), Lan et al. (2019), Miraldo et al. (2019), Pandey et al. (2019), Chaudhuri et al. (2019), Lee et al. (2019), Khan et al. (2019), Zhang et al. (2019), Liao et al. (2019), Pilzer et al. (2019), Kato & Harada (2019), Zhao et al. (2019), Tosi et al. (2019), Meng et al. (2019), Geng et al. (2019), Wang et al. (2019), Jia et al. (2019), Qian et al. (2019), Chen et al. (2019), Chen et al. (2019), Yang et al. (2019), Li et al. (2019), Du et al. (2019), Zhang et al. (2019), Moltisanti et al. (2019), Ke et al. (2019), Zhao et al. (2019), Piergiovanni & Ryoo (2019), Sudhakaran et al. (2019), Wu et al. (2019), Zhang et al. (2019), Mandal et al. (2019), Xie et al. (2019), Liu et al. (2019), Duong et al. (2019), Shao et al. (2019), Kotovenko et al. (2019), Chen et al. (2019), Kolkin et al. (2019), Lee et al. (2019), Cheng et al. (2019), Wang et al. (2019), Wu et al. (2019), Cudeiro et al. (2019), Ben-Shabat et al. (2019), Zhang et al. (2019), Williams et al. (2019), Liu et al. (2019), Zhao et al. (2019), Zhang et al. (2019), Yang et al. (2019), Li et al. (2019), Marin et al. (2019), Barath et al. (2019), He et al. (2019), Zhang et al. (2019), Lu et al. (2019), Aljadaany et al. (2019), Manderscheid et al. (2019), Zhussip et al. (2019), Fu et al. (2019), Xian et al. (2019), Lee et al. (2019), Wang et al. (2019), Liu et al. (2019), Wei et al. (2019), Wang et al. (2019), Xu et al. (2019), Paschalidou et al. (2019), Xing et al. (2019), Feng et al. (2019), Gattupalli et al. (2019), Batra et al. (2019), Zhen et al. (2019), Do et al. (2019), Jiang et al. (2019), Tsai et al. (2019), Guo et al. (2019), Shi et al. (2019), Salvador et al. (2019), Dognin et al. (2019), Shrestha et al. (2019), Su et al. (2019), Nguyen & Okatani (2019), Ye et al. (2019), Lin et al. (2019), Li et al. (2019), Kang et al. (2019), Chen et al. (2019), Zhang et al. (2019), Lu et al. (2019), Li et al. (2019), Uittenbogaard et al. (2019), Kim et al. (2019), Mohajerin & Rohani (2019), Li et al. (2019), Ying et al. (2019), Mentzer et al. (2019), Cho et al. (2019), Deshpande et al. (2019), Lee et al. (2019), Prakash et al. (2019), Yu & Grauman (2019), Yang et al. (2019), Deshpande et al. (2019), Fukui et al. (2019), Minnehan & Savakis (2019), Rajasegaran et al. (2019), Wu et al. (2019), Yi et al. (2019), Heim (2019), Shi et al. (2019), Pope et al. (2019), Abbasnejad et al. (2019), Engilberge et al. (2019), Bao et al. (2019), Tewari et al. (2019), Zhang et al. (2019), Ge et al. (2019), Boukhayma et al. (2019), Wan et al. (2019), Li et al. (2019), Joo et al. (2019), Guler & Kokkinos (2019), Chen et al. (2019), Habibie et al. (2019), Neverova et al. (2019), Li et al. (2019), Ploumpis et al. (2019), Fan et al. (2019), Lorenz et al. (2019), Xiang

et al. (2019), Pavlakos et al. (2019), Liu et al. (2019), Zhou et al. (2019), Lu et al. (2019), Tian et al. (2019), Gandelsman et al. (2019), Brooks & Barron (2019), Zhang et al. (2019), He et al. (2019), Dai et al. (2019), Acuna et al. (2019), Zhang et al. (2019), Gao & Grauman (2019), Birdal & Simsekli (2019), Mollenhoff & Cremers (2019), Zou et al. (2019), Li et al. (2019), Swoboda & Kolmogorov (2019), Swoboda & Kolmogorov (2019), Su et al. (2019), Eilertsen et al. (2019), Goel et al. (2019), Mundt et al. (2019), Yang et al. (2019), Cao et al. (2019), Taran et al. (2019), Liu et al. (2019), Tanno et al. (2019), Aljundi et al. (2019), Molchanov et al. (2019), Webster et al. (2019), Yoo & Kweon (2019), Wang et al. (2019), Zhao et al. (2019), Jiang et al. (2019), Ostapenko et al. (2019), Jaiswal et al. (2019), Taghanaki et al. (2019), Yao et al. (2019), Sagong et al. (2019), Ehret et al. (2019), Jeong et al. (2019), Zhu et al. (2019), Dai et al. (2019), Ding et al. (2019), Lin et al. (2019), Liang et al. (2019), He et al. (2019), Sun et al. (2019), Cai et al. (2019), Tong et al. (2019), Zhu et al. (2019), Kampffmeyer et al. (2019), Zhou et al. (2019), Burlina et al. (2019), Hu et al. (2019), Li et al. (2019), Zhang et al. (2019), Perera et al. (2019), Cheng et al. (2019), (Junbo), Wang et al. (2019), Philion (2019), Mithun et al. (2019), Majumder & Yao (2019), Kortylewski et al. (2019), Agustsson et al. (2019), Chen et al. (2019), Zhang et al. (2019), Simeoni et al. (2019), Fu et al. (2019), Atzmon & Chechik (2019), Chen et al. (2019), Eghbali & Tahvildari (2019), Benenson et al. (2019), Zhang et al. (2019), Jamal & Qi (2019), Ye et al. (2019), Lei & Chen (2019), Hosseini et al. (2019), Silveira & Jung (2019), Wicker & Kwiatkowska (2019), Zhi et al. (2019), Chabra et al. (2019), Campbell et al. (2019), Hasson et al. (2019), Lopez et al. (2019), Facil et al. (2019), Du et al. (2019), Wang et al. (2019), You et al. (2019), Ku et al. (2019), Liu et al. (2019), Hu et al. (2019), Dong & Yang (2019), Wang et al. (2019), Niu et al. (2019), Li et al. (2019), Yu & Grauman (2019), Liu et al. (2019), Jiang et al. (2019), Li et al. (2019), Kreiss et al. (2019), Song et al. (2019), Morais et al. (2019), Zhang et al. (2019), Su et al. (2019), Shi et al. (2019), Nguyen & Okatani (2019), Ghadiyaram et al. (2019), Qiu et al. (2019), Kukleva et al. (2019), Piao et al. (2019), Zhang et al. (2019), Zhong et al. (2019), Geneva et al. (2019), Gopalakrishnan et al. (2019), Zhao et al. (2019), Grigorev et al. (2019), Jenni & Favaro (2019), Chen et al. (2019), Yu & Grauman (2019), Li et al. (2019), Yuan et al. (2019), Zheng et al. (2019), Zhao et al. (2019), Bianco & Cusano (2019), Lee et al. (2019), Yedidia et al. (2019), Ranjan et al. (2019), Wang et al. (2019), Wang et al. (2019), Wang et al. (2019), Gallego et al. (2019), Shi et al. (2019), Stoffregen & Kleeman (2019), Gomez-Villa et al. (2019), Yezzi et al. (2019), Yoo & Kweon (2019), Kim et al. (2019), Uemori et al. (2019), Osawa et al. (2019), Li et al. (2019), Ho et al. (2019), Dwivedi & Roig (2019), Cholakkal et al. (2019), Rolinek et al. (2019), Mou et al. (2019), Lohit et al. (2019), Zhang et al. (2019), Imran et al. (2019), Kim et al. (2019), Biten et al. (2019), Akbari et al. (2019), Aafaq et al. (2019), Li et al. (2019), Bracha & Chechik (2019), Shuster et al. (2019), Nguyen & Okatani (2019), Chen et al. (2019), Schwartz et al. (2019), Cerrone et al. (2019), Kim et al. (2019), Zhang et al. (2019), Zhang et al. (2019), Tokunaga et al. (2019), Orsic et al. (2019), Cucurull et al. (2019), James et al. (2019), Liao et al. (2019), Wang et al. (2019), Retsinas et al. (2019), Broome et al. (2019), Meyer et al. (2019), Liu et al. (2019), Lang et al. (2019), Huang et al. (2019), Sarlin et al. (2019), Robinson et al. (2019), Zhao et al. (2019), Das et al. (2018), Misra et al. (2018), Bai et al. (2018), Yang et al. (2018), Chang et al. (2018), Mueller et al. (2018), Poier et al. (2018), Fang et al. (2018), Wei et al. (2018), Spurr et al. (2018), Ma et al. (2018), Bulat & Tzimiropoulos (2018), Si et al. (2018), Eriksson et al. (2018), Camposeco et al. (2018), Briaes et al. (2018), Luo et al. (2018), Haefner et al. (2018), Zhang & Funkhouser (2018), Yu et al. (2018), Deng et al. (2018), Yang et al. (2018), Groueix et al. (2018), Yang et al. (2018), Barath (2018), Xu et al. (2018), Kumar et al. (2018), Feng et al. (2018), Sun et al. (2018), Qi et al. (2018), Tekin et al. (2018), Tulsiani et al. (2018), Xian et al. (2018), ?, Lee et al. (2018), Zhan et al. (2018), Girdhar et al. (2018), Dong et al. (2018), Li et al. (2018), Dong et al. (2018), Liu et al. (2018), Li et al. (2018), Garcia-Hernando et al. (2018), Saquib Sarfraz et al. (2018), Kumar et al. (2018), Wang et al. (2018), Zhou et al. (2018), Pavlakos et al. (2018), Baradel et al. (2018), Choi et al. (2018), Sun et al. (2018), Meyer et al. (2018), Bideau et al. (2018), Dong et al. (2018), Zhou et al. (2018), Lin & Hung (2018), Zhu et al. (2018), Xue et al. (2018), Tu et al. (2018), Li et al. (2018), Zhang & Funkhouser (2018), He et al. (2018), Wang et al. (2018), Maninis et al. (2018), Huang et al. (2018), Vasu et al. (2018), Yi et al. (2018), Cheng et al. (2018), Khan & Sundaramoorthi (2018), Xu et al. (2018), Wang et al. (2018), Zhang & Funkhouser (2018), Yu et al. (2018), Zhang & Funkhouser (2018), Hui et al. (2018), Lin & Hung (2018), Reddy Mopuri et al. (2018), Liang et al. (2018), Ren & Jae Lee (2018), Hadad et al. (2018), Merget et al. (2018), Huang et al. (2018), Song et al. (2018), Shen (2018), Shen (2018), Liu et al. (2018), Wang et al. (2018), Weiler et al. (2018), Acuna et al. (2018), Fey et al. (2018), Kossaifi et al. (2018), Arnab et al. (2018), Wang et al. (2018), Yu et al. (2018), Qi et al. (2018),

Zhang & Funkhouser (2018), Ren & Jae Lee (2018), Li et al. (2018), Kong & Fowlkes (2018), Noh et al. (2018), Chuang et al. (2018), Hua et al. (2018), Deng et al. (2018), Zhu et al. (2018), Jae Hwang et al. (2018), Song et al. (2018), Lee et al. (2018), Chen et al. (2018), Zhou et al. (2018), Kalayeh et al. (2018), Fan & Zhou (2018), Singh et al. (2018), Li et al. (2018), Uijlings et al. (2018), Kim et al. (2018), Ehret & Arias (2018), Chao et al. (2018), Xiao et al. (2018), Wang et al. (2018), Liu et al. (2018), Chen et al. (2018), Song et al. (2018), Chen et al. (2018), Sung et al. (2018), Caesar et al. (2018), Johnson et al. (2018), Cao et al. (2018), Jayaraman & Grauman (2018), Wang et al. (2018), Yang et al. (2018), Chen et al. (2018), Ge et al. (2018), Cao et al. (2018), Wan et al. (2018), Yu et al. (2018), Xu et al. (2018), Zhang & Funkhouser (2018), Hong et al. (2018), Chen et al. (2018), Wang et al. (2018), Shen (2018), Zhang & Funkhouser (2018), Wang et al. (2018), Sun et al. (2018), Hu et al. (2018), Lee et al. (2018), Cheng et al. (2018), Wang et al. (2018), Adel Bargal et al. (2018), Yang et al. (2018), Xu et al. (2018), Wang et al. (2018), Zlateski et al. (2018), Chang et al. (2018), Hu et al. (2018), Bai et al. (2018), Qi et al. (2018), Tulyakov et al. (2018), Pan et al. (2018), Honari et al. (2018), Pal & Balasubramanian (2018), ?, Lee et al. (2018), Gordon et al. (2018), Zhou et al. (2018), Wang et al. (2018), Laude et al. (2018), Eykholt et al. (2018), Joo et al. (2018), Zeng et al. (2018), Han et al. (2018), Haris et al. (2018), Chen et al. (2018), Cahill et al. (2018), Abdelhamed et al. (2018), Niklaus & Liu (2018), Wang et al. (2018), Jeon et al. (2018), Sironi et al. (2018), Zhang & Funkhouser (2018), Kat et al. (2018), Song et al. (2018), Takeda et al. (2018), Liao et al. (2018), Wang et al. (2018), Yang et al. (2018), Prashnani et al. (2018), Tang et al. (2018), Zhang & Funkhouser (2018), Wu et al. (2018), Gilbert et al. (2018), Yu et al. (2018), Wei et al. (2018), Hong et al. (2018), Litany et al. (2018), Zulqarnain Gilani & Mian (2018), Dinesh Reddy et al. (2018), Zhi et al. (2018), Price et al. (2018), Richter & Roth (2018), He et al. (2018), Stutz & Geiger (2018), Georgakis et al. (2018), Liu et al. (2018), Yin & Shi (2018), Pritts et al. (2018), Fu et al. (2018), Miraldo et al. (2018), Wang et al. (2018), Wang et al. (2018), Li et al. (2018), Zou et al. (2018), Batsos et al. (2018), Pang et al. (2018), Liu et al. (2018), Zhao et al. (2018), Nie et al. (2018), Chang et al. (2018), Xu et al. (2018), Wu et al. (2018), Fang et al. (2018), Zangir et al. (2018), Marinoiu et al. (2018), Yang et al. (2018), Xu et al. (2018), Peng & Wang (2018), Cherian et al. (2018), Zhao et al. (2018), Huang et al. (2018), Peng & Wang (2018), Feng et al. (2018), Yao et al. (2018), Gupta et al. (2018), Shen (2018), Wang et al. (2018), Li et al. (2018), Shi et al. (2018), Shen (2018), Zhang & Funkhouser (2018), Pernici et al. (2018), Guo & Cheung (2018), Xu et al. (2018), Hold-Geoffroy et al. (2018), Xiong et al. (2018), Kligler et al. (2018), Silva et al. (2018), Ding et al. (2018), Yu et al. (2018), Yang et al. (2018), Zhong et al. (2018), Kligvasser et al. (2018), Yu et al. (2018), Rott Shaham & Michaeli (2018), Hu et al. (2018), Zhang & Funkhouser (2018), Qian et al. (2018), Chen et al. (2018), Mildenhall et al. (2018), Qu et al. (2018), Zhang & Funkhouser (2018), Su et al. (2018), Kostrikov et al. (2018), Tewari et al. (2018), Bloesch et al. (2018), Wang et al. (2018), Liu et al. (2018), Wang et al. (2018), Verma et al. (2018), Agudo et al. (2018), Brahmabhatt et al. (2018), Huang et al. (2018), Yuan et al. (2018), Slavcheva et al. (2018), Nath Kundu et al. (2018), Yi et al. (2018), Korman et al. (2018), Zangir et al. (2018), Zhang & Funkhouser (2018), Jacob et al. (2018), Van Horn et al. (2018), Cao et al. (2018), Jenni & Favaro (2018), Zhu et al. (2018), Huang et al. (2018), Keller et al. (2018), Liu et al. (2018), Duan et al. (2018), Yu et al. (2018), Atapour-Abarghouei & Breckon (2018), Liang et al. (2018), Huang et al. (2018), Teo et al. (2018), Ben Tanfous et al. (2018), Turek & Huth (2018), Xu et al. (2018), Shi et al. (2018), Li et al. (2018), Li et al. (2018), Tulsiani et al. (2018), Isokane et al. (2018), Liao et al. (2018), Muralikrishnan et al. (2018), Mo et al. (2018), Im et al. (2018), ?, Fang et al. (2018), Sun et al. (2018), Larsson et al. (2018), Vongkulbhisal et al. (2018), Chu et al. (2018), Zhang & Funkhouser (2018), Grabner et al. (2018), Li et al. (2018), Poms et al. (2018), Chen et al. (2018), Shin et al. (2018), Pan et al. (2018), Zhao et al. (2018), Liu et al. (2018), Barnea & Ben-Shahar (2018), Palacio et al. (2018), Shocher et al. (2018), Wang et al. (2018), Mosinska et al. (2018), Bauchet & Lafarge (2018), Chen et al. (2018), Yair & Michaeli (2018), Gou et al. (2018), Wloka et al. (2018), Zhang & Funkhouser (2018), Lefkimmiatis (2018), Li et al. (2018), Jo et al. (2018), Liu et al. (2018), Li et al. (2018), Ren & Jae Lee (2018), Zhang & Funkhouser (2018), Vasu et al. (2018), Lei et al. (2018), Chen et al. (2018), Zhang & Funkhouser (2018), Juefei-Xu et al. (2018), Hoshen & Wolf (2018), Mukherjee et al. (2018), Chen et al. (2018), Douze et al. (2018), Zhang & Funkhouser (2018), Gast & Roth (2018), Sabokrou et al. (2018), Akhtar et al. (2018), Hu et al. (2018), Siarohin et al. (2018), Homayounfar et al. (2018), Kolouri et al. (2018), Zhang & Funkhouser (2018), Kozerawski & Turk (2018), Ikami et al. (2018), Mejjati et al. (2018), Yang et al. (2018), Deshpande et al. (2018), ?, Regmi & Borji (2018), Dekel et al. (2018), Suzuki et al. (2018), Birdal et al. (2018), Chen et al. (2018), Zhou et al. (2018), Nath Kundu et al. (2018), Luo

et al. (2018), Singh et al. (2018), Hu et al. (2018), Shen (2018), Gurari et al. (2018), Babu Sam et al. (2018), Choi et al. (2018), Novotny et al. (2018), Douze et al. (2018), Li et al. (2018), Ghasedi Dizaji et al. (2018), Anderson et al. (2018), Yang et al. (2018), Mohapatra et al. (2018), Lee et al. (2018), Zamir et al. (2018), Saito et al. (2018), Wu et al. (2018), Liu et al. (2018), Sankaranarayanan et al. (2018), Fawzi et al. (2018), Mancini et al. (2018), Yang et al. (2018), Zhou et al. (2018), Zhang & Funkhouser (2018), Xie et al. (2018), Mac Aodha et al. (2018), Järemo Lawin et al. (2018), Jie et al. (2018), Song et al. (2018), Yang et al. (2018), Gallego et al. (2018), Bagautdinov et al. (2018), Tatarchenko et al. (2018), Paschalidou et al. (2018), Kato et al. (2018), Xu et al. (2018), Yang et al. (2018), ?, Larsson et al. (2018), Zuffi et al. (2018), Xu et al. (2018), Xia et al. (2018), Engilberge et al. (2018), Tan et al. (2018), LaLonde et al. (2018), Chen et al. (2018), He et al. (2018), Sharma et al. (2018), Chen et al. (2018), Ehsani et al. (2018), Zhao et al. (2018), Cheng et al. (2018), Cai et al. (2018), Gordon et al. (2018), Liu et al. (2018), Cui et al. (2018), Radosavovic et al. (2018), Balajee Vasudevan et al. (2018), Zhai et al. (2018), Wang et al. (2018), Zhang & Funkhouser (2018), Kim et al. (2018), Roveri et al. (2018), Bozek et al. (2018), Bhattacharyya et al. (2018), Zhang & Funkhouser (2018), Wang et al. (2018), Teney et al. (2018), Hu et al. (2018), Li et al. (2018), Zhuang et al. (2018), Zhang & Funkhouser (2018), Wang et al. (2018), Verma et al. (2018), Cao et al. (2018), Faraone et al. (2018), Bernard et al. (2018), Zhang & Funkhouser (2018), Chen et al. (2018), Rozantsev et al. (2018), Kim et al. (2018), Senocak et al. (2018), Gidaris & Komodakis (2018), Wang et al. (2018), Johnston et al. (2018), Mentzer et al. (2018), Skafte Detlefsen et al. (2018), Berman et al. (2018), Poursaeed et al. (2018), Yu et al. (2018), Kanbak et al. (2018), Zhu et al. (2018), Kumar Roy et al. (2018), Angelina Uy & Hee Lee (2018), Yu et al. (2018), Zhou et al. (2018), Murez et al. (2018), Sandler et al. (2018), Niu et al. (2018), Schilling et al. (2018), Zhuang et al. (2018), Shen (2018), Landrieu & Simonovsky (2018), Zhu et al. (2018), Dai et al. (2018), Lan et al. (2018), Yun & Sim (2018), Xie et al. (2018), Liu et al. (2018), Kim et al. (2018), Cao et al. (2018), Fu et al. (2018), Brachmann & Rother (2018), Rad et al. (2018), Kim et al. (2018), Pumarola et al. (2018), Sadeghi et al. (2018), Ma et al. (2018), Urooj & Borji (2018), Bastani et al. (2018), Paul & Roulletiotis (2018), Rematas et al. (2018), Shin et al. (2018), Liang et al. (2018), Nie et al. (2018), Wan et al. (2018), Zhang & Funkhouser (2018), Lao & Ait-Aider (2018), Tanaka et al. (2018), Meshgi et al. (2018), Bapat et al. (2018), He et al. (2018), Wang et al. (2018), Wang et al. (2018), Wang et al. (2018), Tang et al. (2018), Wang et al. (2018), Wang et al. (2018), Li et al. (2018), Bouritsas et al. (2018), Zhang & Funkhouser (2018), Jain et al. (2018), Mascharka et al. (2018), Xu et al. (2018), Wang et al. (2018), Agrawal et al. (2018), Ahn & Kwak (2018), Fouhey et al. (2018), Inoue et al. (2018), Kanezaki et al. (2018), He et al. (2018), Chavdarova et al. (2018), Miao et al. (2018), Sun et al. (2018), Shin Yoon et al. (2018), Han et al. (2018), Moon et al. (2018), Zheng et al. (2018), Huang et al. (2018), Zhang & Funkhouser (2018), Cheng et al. (2018), Zhu et al. (2018), Luvizon et al. (2018), Wan et al. (2018), Zhong et al. (2018), Andriluka et al. (2018), Wu et al. (2018), Cao et al. (2018), Liu et al. (2018), Luo et al. (2018), Liu et al. (2018), Li et al. (2018), Narayana et al. (2018), Shen (2018), Yang et al. (2018), Wang et al. (2018), Xu et al. (2018), Pan et al. (2018), Madsen et al. (2018), Piergiovanni & Ryoo (2018), Wang et al. (2018), Tang et al. (2018), Xu et al. (2018), Abu Farha et al. (2018), Ren & Jae Lee (2018), Si et al. (2018), Zhou et al. (2018), Shi et al. (2018), Zangir et al. (2018), Li et al. (2018), Chang et al. (2018), Maqueda et al. (2018), Hu et al. (2018), Wei et al. (2018), Lee et al. (2018), Li et al. (2018), Wang et al. (2018), Dorta et al. (2018), Tokozume et al. (2018), Volpi et al. (2018), Yu et al. (2018), Sharma et al. (2018), Lin & Hung (2018), ?, Xian et al. (2018), Tanaka et al. (2018), Aneja et al. (2018), Cheng et al. (2018), Mallasto & Feragen (2018), Gan et al. (2018), Firman et al. (2018), Abdullah Jamal et al. (2018), Kobayashi (2018), Mostajabi et al. (2018), ?, Kaffle et al. (2018), Ma et al. (2018), Mahjourian et al. (2018), Liu et al. (2018), Liu et al. (2018), Zhao et al. (2018), ?, Chao et al. (2018), Joo et al. (2018), You et al. (2018), Li et al. (2018), Jain et al. (2018), Shen (2018), Koniusz et al. (2018), Lin & Hung (2018), Tian et al. (2018), Cui et al. (2018), Zhang & Funkhouser (2018), Qi et al. (2018), Zellers et al. (2018), Tan et al. (2018), Dhawale et al. (2018), Wang et al. (2018), Chen et al. (2018), Sage et al. (2018), Bertasius et al. (2018), Qi et al. (2018), Liao et al. (2018), Veit et al. (2018), Park et al. (2018), Gao et al. (2018), Huang et al. (2018), Gavrilyuk et al. (2018), Possas et al. (2018), Bao et al. (2018), Richard et al. (2018), Li et al. (2018), Yu et al. (2018), Fan & Zhou (2018), Wu et al. (2018), Ristani & Tomasi (2018), Gu et al. (2018), Doughty et al. (2018), Hasan et al. (2018), Anderson et al. (2018), Nguyen & Okatani (2018), Massiceti et al. (2018), Wu et al. (2018), Li et al. (2018), Yeh et al. (2018), Liang et al. (2018), Ehsani et al. (2018), Cai et al. (2018), Huang et al. (2018), Christie et al. (2018), Peng & Wang (2018), Rao et al. (2018), Zhang & Funkhouser (2018), Hui et al. (2018), Xu et al.

(2018), Blau & Michaeli (2018), Zhou et al. (2018), Mirdehghan et al. (2018), Smith et al. (2018), Baradad et al. (2018), Tlustý et al. (2018), Chen et al. (2018), Sengupta et al. (2018), Chen et al. (2018), Meka et al. (2018), Zhang & Funkhouser (2018), Jin et al. (2018), Anirudh et al. (2018), Men et al. (2018), Fajtl et al. (2018), Pan et al. (2018), Su et al. (2018), Srinivasan et al. (2018), Sakakibara et al. (2018), Levis et al. (2018), Mahesh Mohan & Rajagopalan (2018), Huang et al. (2018), Can Karaim & Brown (2018), Tran et al. (2018), Fan & Zhou (2018), Yang et al. (2018), Sultani et al. (2018), Zhou et al. (2018), Yang et al. (2018), Ding et al. (2018), Li et al. (2018), Li et al. (2018), Liu et al. (2018), Hara et al. (2018), Xu et al. (2018), Zhao et al. (2018), Gao et al. (2018), Zhang & Funkhouser (2018), Bilinski & Prisacariu (2018), Kaneko et al. (2018), Li et al. (2018), Sajjadi et al. (2018), Zhang & Funkhouser (2018), Li et al. (2018), Chen et al. (2018), Yang et al. (2018), Baslamisli et al. (2018), Yoo et al. (2018), Korman et al. (2018), Tesfaldet et al. (2018), Bao et al. (2018), Akkaynak & Treibitz (2018), Barath (2018), Lei et al. (2018), Nguyen & Okatani (2018), Zhang & Funkhouser (2018), Lan et al. (2018), Zhang & Funkhouser (2018), Ma et al. (2018), Wei et al. (2018), Zhang & Funkhouser (2018), Nilsson & Sminchisescu (2018), Wu et al. (2018), Chen et al. (2018), Zhang & Funkhouser (2018), Wang et al. (2018), Krishna et al. (2018), Tychsen-Smith & Petersson (2018), Shen (2018), ?, Gonzalez-Garcia et al. (2018), Rocco et al. (2018), Gao et al. (2018), Liu et al. (2018), Pirinen & Sminchisescu (2018), Lu et al. (2018), Luo et al. (2018), Ma et al. (2018), Liu et al. (2018), Zhang & Funkhouser (2018), Tung et al. (2018), Huang et al. (2018), Choutas et al. (2018), Zhang & Funkhouser (2018), Wang et al. (2018), He et al. (2018), Kumar Roy et al. (2018), He et al. (2018), Wang et al. (2018), Deng et al. (2018), Chen et al. (2018), Chu et al. (2018), Kanazawa et al. (2018), Hu et al. (2018), Amirul Islam et al. (2018), Zhang & Funkhouser (2018), Hsiao & Grauman (2018), Niu et al. (2018), Gu et al. (2018), Wang et al. (2018), Taira et al. (2018), Zhu et al. (2018), Lu et al. (2018), Qiao et al. (2018), Chen et al. (2018), Cao et al. (2018), Hu et al. (2018), Wei et al. (2018), Wang et al. (2018), Yu et al. (2018), ?, Pavlakos et al. (2018), Speciale et al. (2018), Vianello et al. (2018), Wu et al. (2018), Tran et al. (2018), Zhao et al. (2018), Huang et al. (2018), Wug Oh et al. (2018), Richard et al. (2018), Sigurdsson et al. (2018), Zhao et al. (2018), Cheng et al. (2018), Zhou et al. (2018), Kanehira et al. (2018), Fujimura et al. (2018), Hu et al. (2018), Li et al. (2018), Tsai et al. (2018), Kendall et al. (2018), Li et al. (2018), Gorji & Clark (2018), Wang et al. (2018), Fan & Zhou (2018), Andreopoulos et al. (2018), Han et al. (2018), Lyu et al. (2018), Azadi et al. (2018), Shlizerman et al. (2018), Yang et al. (2018), Yagi et al. (2018), Annadani & Biswas (2018), Ravi et al. (2018), Wang et al. (2018), Iscen et al. (2018), Iscen et al. (2018), Yang et al. (2018), Liu et al. (2018), Zhang & Funkhouser (2018), Patro & Namboodiri (2018), Niu et al. (2018), Ramanishka et al. (2018), Ak et al. (2018), Wehrmann & Barros (2018), Liu et al. (2018), Su et al. (2018), Deng et al. (2018), Song et al. (2018), Mallya & Lazebnik (2018), Wang et al. (2018), Cihan Camgoz et al. (2018), Wang et al. (2018), Baraldi et al. (2018), Chen et al. (2018), Su et al. (2018), Long et al. (2018), Feichtenhofer et al. (2018), Hao et al. (2018), Park et al. (2018), Tung et al. (2018), Shanu et al. (2018), Chen et al. (2018), Dolhansky & Canton Ferrer (2018), Zhang & Funkhouser (2018), Zhuang et al. (2018), Kuen et al. (2018), Wang et al. (2018), Lv et al. (2018), Sun et al. (2018), Wu et al. (2018), Chen et al. (2018), Hong et al. (2018), Chen et al. (2018), Pinheiro (2018), Riaz Muhammad et al. (2018), ?, Sznaier & Camps (2018), Wang et al. (2018), Wei et al. (2018), Shen (2018), Marsden et al. (2018), Teja Mullaipudi et al. (2018), Xu et al. (2018), Russo et al. (2018), Lezama et al. (2018), Rebuffi et al. (2018), Lin & Hung (2018), Amayo et al. (2018), Ikami et al. (2018), Zhang & Funkhouser (2018), Lui et al. (2018), Tao et al. (2018), Kupyn et al. (2018), Li et al. (2018), Li et al. (2018), Galdran et al. (2018), Gu et al. (2018), Zhang & Funkhouser (2018), Sheng et al. (2018), Yokota et al. (2018), Shen (2018), Duan et al. (2018), Yu et al. (2018), Li et al. (2018), Xu et al. (2018), Baumgartner et al. (2018), Joo et al. (2018), Baek et al. (2018), Balakrishnan et al. (2018), Liu et al. (2018), Gkioxari et al. (2018), Sener & Yao (2018), Genova et al. (2018), Alldieck et al. (2018), Hu et al. (2018), Huynh et al. (2018), Ge et al. (2018), Nagrani et al. (2018), Rhodin et al. (2018), Zhang & Funkhouser (2018), Xian et al. (2018), Orekondy et al. (2018), Henriques & Vedaldi (2018), Bhattacharyya et al. (2018), Puig et al. (2018), Sankaranarayanan et al. (2018), Ghosh et al. (2018), An et al. (2018), ?, Qian et al. (2018), Rupprecht et al. (2018), Khrulkov & Oseledets (2018), Prakash et al. (2018), Vicol et al. (2018), Mathews et al. (2018), Sattler et al. (2018), Liu et al. (2018), Pumarola et al. (2018), Xie et al. (2018), Villegas et al. (2018), Chen et al. (2018), Gong et al. (2018), Kim et al. (2018), Kim et al. (2018), Wang et al. (2018), Zoph et al. (2018), Ren & Jae Lee (2018), Chen et al. (2018), Fong & Vedaldi (2018), Zhou et al. (2018), Dogan et al. (2018), Liu et al. (2018), Van Horn et al. (2018), Park et al. (2018), Choi et al. (2018), Wang et al. (2018), Qi et al. (2018), Wu et al. (2018), Zhang & Funkhouser

(2018), Huang et al. (2018), Xie et al. (2018), Esser et al. (2018), Liu et al. (2018), Marcos et al. (2018), Lambert et al. (2018), Luo et al. (2018), Wang et al. (2018), Chandra et al. (2018), Shin et al. (2018), Sun et al. (2018), Fan & Zhou (2018), Yellin et al. (2018), Sun et al. (2018), Li et al. (2018), Hui et al. (2018), Song et al. (2018), Jiang et al. (2018), Runia et al. (2018), Kong & Fowlkes (2018), Zhang & Funkhouser (2018), Li et al. (2018), Wang et al. (2018), Teixeira et al. (2018), Xia et al. (2018), Han et al. (2018), Liu et al. (2018), Bibi et al. (2018), Saeedan et al. (2018), Wan et al. (2018), Wu et al. (2018), Hu et al. (2018), Alperovich et al. (2018), Gao et al. (2018), Mehr et al. (2018), Konyushkova et al. (2018), Dong et al. (2018), Yu et al. (2018), Le & Duan (2018), Li et al. (2018), Graham et al. (2018), Chen et al. (2018), Zhang & Funkhouser (2018), Balakrishnan et al. (2018), Yan et al. (2018), ?, Jiang et al. (2018), Dalca et al. (2018), Raposo & Barreto (2018), Caicedo et al. (2018), Haehn et al. (2018), Wang et al. (2018), Nathan Mundhenk et al. (2018), Keshari et al. (2018), Noroozi et al. (2018), Beluch et al. (2018), Ye et al. (2018), Tabernik et al. (2018), Li et al. (2018), Chavdarova et al. (2018), Chen et al. (2018), Zhou et al. (2018), Zhu et al. (2018), Ulyanov et al. (2018), Lin & Hung (2018), Chen et al. (2018), Teney et al. (2017), Zhao et al. (2017), Juefei-Xu et al. (2017), Aksoy et al. (2017), Trigeorgis et al. (2017), Booth et al. (2017), Kiran Adhikarla et al. (2017), Kotaru & Katti (2017), Tanaka et al. (2017), Haeusser et al. (2017), Queau et al. (2017), Varol et al. (2017), Long & Hua (2017), Hyeong Hong et al. (2017), Wang et al. (2017), Qin et al. (2017), Lea et al. (2017), Gurumurthy et al. (2017), Talmi et al. (2017), Boukhayma et al. (2017), Li et al. (2017), Mahasseni et al. (2017), Liu et al. (2017), Caelles et al. (2017), Seki & Pollefeys (2017), Ganju et al. (2017), Vedantam et al. (2017), Cevikalp & Triggs (2017), Godard et al. (2017), Larsson & Olsson (2017), Ren et al. (2017), Nam et al. (2017), Wijmans & Furukawa (2017), Krause et al. (2017), Das et al. (2017), Lee et al. (2017), Zhang et al. (2017), He et al. (2017), Kong & Fowlkes (2017), Lu et al. (2017), Li et al. (2017), Yan et al. (2017), Chen et al. (2017), Liu et al. (2017), Mustafa & Hilton (2017), Garcia-Hernando & Kim (2017), Arnab & Torr (2017), Jampani et al. (2017), Michel et al. (2017), Yu et al. (2017), Hu et al. (2017), Yu et al. (2017), Wang et al. (2017), Ye et al. (2017), Zhou et al. (2017), Zhang et al. (2017), Proenca & Neves (2017), Chao et al. (2017), Zhang et al. (2017), Takahashi et al. (2017), Law et al. (2017), Sigurdsson et al. (2017), Wang et al. (2017), Fan et al. (2017), Al-Halah & Stiefelhagen (2017), Lai et al. (2017), Zhou et al. (2017), Durand et al. (2017), Qi et al. (2017), Tian et al. (2017), Niklaus et al. (2017), Wan et al. (2017), Cao et al. (2017), Wu et al. (2017), Zhang et al. (2017), Zhang et al. (2017), Kang et al. (2017), Da et al. (2017), Kehl et al. (2017), Richard et al. (2017), Xue et al. (2017), Ma et al. (2017), Huang et al. (2017), Liu et al. (2017), Ito & Okatani (2017), Lin et al. (2017), Larsson & Olsson (2017), Veit et al. (2017), Veit et al. (2017), Liang et al. (2017), Bertasius et al. (2017), Zhai et al. (2017), Khoreva et al. (2017), Barron & Tsai (2017), Chunseong Park et al. (2017), Mostegel et al. (2017), Diba et al. (2017), Wang et al. (2017), Gong et al. (2017), Logothetis et al. (2017), Hu et al. (2017), Dong et al. (2017), Girdhar et al. (2017), Dave et al. (2017), Hu et al. (2017), Bernard et al. (2017), Liang et al. (2017), Vondrick & Torralba (2017), Mahasseni et al. (2017), Figurnov et al. (2017), Su & Hua (2017), Zhang et al. (2017), Ke et al. (2017), Zhao et al. (2017), Ge & Yu (2017), Hussein et al. (2017), Abbaspour Tehrani et al. (2017), Hu et al. (2017), Isola et al. (2017), Chattopadhyay et al. (2017), Simon et al. (2017), Zhu et al. (2017), Xu et al. (2017), Wang et al. (2017), Duan et al. (2017), Akhtar et al. (2017), Yang et al. (2017), Cui et al. (2017), Li et al. (2017), Ioannou et al. (2017), Sandhan & Young Choi (2017), Chollet (2017), Richardson et al. (2017), Qian et al. (2017), Su & Hua (2017), Xu et al. (2017), Yan et al. (2017), Zamir et al. (2017), Zhong et al. (2017), Cao et al. (2017), Li et al. (2017), Li et al. (2017), Yang et al. (2017), Zheng et al. (2017), Jie et al. (2017), Slavcheva et al. (2017), Mueller et al. (2017), Tran et al. (2017), Tran et al. (2017), Liu et al. (2017), Pascoe et al. (2017), Isack et al. (2017), Caba Heilbron et al. (2017), Zhu et al. (2017), Kong & Fowlkes (2017), Schonberger et al. (2017), Xie et al. (2017), Su & Hua (2017), Arsalan Soltani et al. (2017), Zhao et al. (2017), Wang et al. (2017), O'Toole et al. (2017), Gu et al. (2017), Cui et al. (2017), Wei et al. (2017), Yang et al. (2017), Plotz & Roth (2017), Swoboda et al. (2017), Swoboda et al. (2017), Swoboda et al. (2017), Long & Hua (2017), Sattler et al. (2017), Liu et al. (2017), Baraldi et al. (2017), Kosti et al. (2017), Kim & Lee (2017), Shi et al. (2017), Kong & Fowlkes (2017), Hussain et al. (2017), Bibi et al. (2017), Baque et al. (2017), Chunseong Park et al. (2017), Song et al. (2017), Halber & Funkhouser (2017), Moosavi-Dezfooli et al. (2017), Tavakoli et al. (2017), Elhamifar & Clara De Paolis Kaluza (2017), Misra et al. (2017), Zeng et al. (2017), Yeo et al. (2017), Savinov et al. (2017), Chu et al. (2017), Li et al. (2017), Zhou et al. (2017), Zhang et al. (2017), Nakamura et al. (2017), Zhuang et al. (2017), Le et al. (2017), Chen et al. (2017), Chen et al. (2017), Shen et al. (2017), Lin et al. (2017), Trager et al. (2017), Patrini et al. (2017), Shen

et al. (2017), Liu et al. (2017), Li et al. (2017), Zendel et al. (2017), Ge & Yu (2017), Rebuffi et al. (2017), Iqbal et al. (2017), Zhang et al. (2017), Almazan et al. (2017), Chabot et al. (2017), Ding et al. (2017), Tepper & Sapiro (2017), Chan et al. (2017), Iscen et al. (2017), Yang et al. (2017), Wang et al. (2017), Shrivastava et al. (2017), Lin et al. (2017), Rota Buló et al. (2017), Kim & Lee (2017), Dekel et al. (2017), Ji et al. (2017), Blasinski et al. (2017), Xu et al. (2017), Huang et al. (2017), Yang et al. (2017), Luo et al. (2017), Chang et al. (2017), Zeng et al. (2017), Elhabian & Whitaker (2017), Huang et al. (2017), Gao et al. (2017), Zhou et al. (2017), Yan et al. (2017), Yi et al. (2017), Rengarajan et al. (2017), Hu et al. (2017), Huang et al. (2017), Gong et al. (2017), Diba et al. (2017), Knobelreiter et al. (2017), Zhu et al. (2017), Li et al. (2017), Pansari & Pawan Kumar (2017), Tolias & Chum (2017), Li et al. (2017), Rezende et al. (2017), Lin et al. (2017), Osman Ulusoy et al. (2017), Yu et al. (2017), Wei et al. (2017), Lee et al. (2017), Poggi & Mottocchia (2017), Ilg et al. (2017), Wang et al. (2017), Feng et al. (2017), Murdock & De la Torre (2017), Tome et al. (2017), Gorji & Clark (2017), Lam et al. (2017), Bai et al. (2017), Kim & Lee (2017), Shi et al. (2017), Wu et al. (2017), Lin et al. (2017), Deng et al. (2017), Veeravasarapu et al. (2017), Wang et al. (2017), Wang et al. (2017), Gupta et al. (2017), Tulsiani et al. (2017), Tulsiani et al. (2017), Chen et al. (2017), Zhu et al. (2017), Perazzi et al. (2017), Marino et al. (2017), Ge & Yu (2017), Ryan Fanello et al. (2017), Pathak et al. (2017), Yun et al. (2017), Wang et al. (2017), Wang et al. (2017), Tang et al. (2017), Hyeong Hong et al. (2017), Jang et al. (2017), Hayat et al. (2017), Yang et al. (2017), Palmer et al. (2017), Sawatzky et al. (2017), Valmadre et al. (2017), Strecke et al. (2017), Moreno-Noguer (2017), Qin et al. (2017), Tang et al. (2017), Li et al. (2017), Liu et al. (2017), Liu et al. (2017), Zhao et al. (2017), Martinez et al. (2017), Johnson et al. (2017), Buch et al. (2017), Cui et al. (2017), Peng et al. (2017), Straub et al. (2017), Ithapu et al. (2017), Treible et al. (2017), Xu et al. (2017), Usumezbas et al. (2017), Bak & Carr (2017), Liu et al. (2017), Yang et al. (2017), Salvador et al. (2017), Cheng et al. (2017), Guo & Chao (2017), Wang et al. (2017), Zhang et al. (2017), Gholami & Pavlovic (2017), Dai et al. (2017), Chen et al. (2017), Cosmin Duta et al. (2017), Li et al. (2017), Li et al. (2017), Mao et al. (2017), Gan et al. (2017), Tai et al. (2017), Wang et al. (2017), Yu et al. (2017), Kodirov et al. (2017), Jevnisek & Avidan (2017), Li et al. (2017), Hou et al. (2017), Zhang et al. (2017), Cherian et al. (2017), Jiang & Li (2017), Zhou et al. (2017), Bailer et al. (2017), Schops et al. (2017), Xiong et al. (2017), Li et al. (2017), Ke et al. (2017), Ajanthan et al. (2017), Sun et al. (2017), Lv et al. (2017), Vestner et al. (2017), Malti & Herzet (2017), Kaltenmark et al. (2017), Han et al. (2017), Aljundi et al. (2017), Kar et al. (2017), Tokmakov et al. (2017), You et al. (2017), Walecki et al. (2017), Xiao et al. (2017), Armagan et al. (2017), Rogez et al. (2017), Jun Koh & Kim (2017), Hu et al. (2017), Shi et al. (2017), Wu et al. (2017), Sun et al. (2017), Xu et al. (2017), Chunseong Park et al. (2017), Jin et al. (2017), He et al. (2017), Roy & Todorovic (2017), Tang et al. (2017), Ravi et al. (2017), Kim & Lee (2017), Kim & Lee (2017), Riegler et al. (2017), Lefkimiatis (2017), Janai et al. (2017), Tian et al. (2017), Li et al. (2017), Jin et al. (2017), Fernando et al. (2017), Shen et al. (2017), Kayaba & Kokumai (2017), Dutt Jain et al. (2017), Yoo et al. (2017), Yuan et al. (2017), Simonovsky & Komodakis (2017), Cole et al. (2017), Zhang et al. (2017), Bousmalis et al. (2017), Yokota & Hontani (2017), Zhou et al. (2017), Amirul Islam et al. (2017), Yu et al. (2017), Gu et al. (2017), Kalogerakis et al. (2017), Tsai et al. (2017), Xu et al. (2017), Morteza Safdarnejad & Liu (2017), Zhang et al. (2017), Chen et al. (2017), Yan et al. (2017), Herath et al. (2017), Fu et al. (2017), Zhang et al. (2017), Chen et al. (2017), Nah et al. (2017), Wang et al. (2017), Liu et al. (2017), Li et al. (2017), Li et al. (2017), Zhang et al. (2017), Taniai et al. (2017), Santa Cruz et al. (2017), Srinivasan et al. (2017), Shimano et al. (2017), Jiang & Li (2017), Gatys et al. (2017), Chen et al. (2017), Yan et al. (2017), Wang et al. (2017), Wang et al. (2017), Shen et al. (2017), Takatani et al. (2017), Cheng et al. (2017), Jiang & Li (2017), Qu et al. (2017), Mandal et al. (2017), Hu et al. (2017), Haouchine & Cotin (2017), Vongkulbhisal et al. (2017), Karlinsky et al. (2017), Shih et al. (2017), Yim et al. (2017), Xia et al. (2017), Pohlen et al. (2017), Ranjan & Black (2017), Weng et al. (2017), Bian et al. (2017), Zhang et al. (2017), Jeon & Kim (2017), Ren et al. (2017), Song et al. (2017), Gomez et al. (2017), Khan et al. (2017), Lao & Sundaramoorthi (2017), Chang et al. (2017), Wu et al. (2017), Zhang et al. (2017), Antunes et al. (2017), Koller et al. (2017), Dong et al. (2017), Bagautdinov et al. (2017), Wang et al. (2017), Zhang et al. (2017), Jia et al. (2017), Peng et al. (2017), Yang et al. (2017), Zhang et al. (2017), Pan et al. (2017), Ramakrishnan et al. (2017), Jiang & Li (2017), Joon Oh et al. (2017), Liu et al. (2017), Zhang et al. (2017), Fu et al. (2017), Vasu & Rajagopalan (2017), Cavallari et al. (2017), Nguyen et al. (2017), Koniusz et al. (2017), Sheng et al. (2017), Arvanitopoulos et al. (2017), Hosang et al. (2017), Guan & Smith (2017), Karessli et al. (2017), Ma et al. (2017), Camposeco et al. (2017), Cohen & Weinshall (2017),

Zweig & Wolf (2017), Zhang et al. (2017), Xian et al. (2017), Wang et al. (2017), Eisenschtat & Wolf (2017), Wigness & Rogers (2017), Esmaeili et al. (2017), Elbaz et al. (2017), Shaked & Wolf (2017), Achanta & Susstrunk (2017), Borghi et al. (2017), Wulff et al. (2017), Ledig et al. (2017), Miksik et al. (2017), Huang et al. (2017), Yu et al. (2017), Mai et al. (2017), Feichtenhofer et al. (2017), Mo et al. (2017), Zhou et al. (2017), Roberto de Souza et al. (2017), Feichtenhofer et al. (2017), Caballero et al. (2017), Sharghi et al. (2017), Sengupta et al. (2017), Choi et al. (2017), Lathuiliere et al. (2017), Dibra et al. (2017), He et al. (2017), Albl et al. (2017), Kong & Fowlkes (2017), Yuan et al. (2017), Yuan et al. (2017), Shahpaski et al. (2017), Zhang et al. (2017), Papandreou et al. (2017), Kukulova et al. (2017), Gorelick et al. (2017), Akkaynak et al. (2017), Speciale et al. (2017), Schuster et al. (2017), Briaes & Gonzalez-Jimenez (2017), Zhai et al. (2017), Rohrbach et al. (2017), Luan et al. (2017), Kembhavi et al. (2017), Kirillov et al. (2017), Venkateswara et al. (2017), Worrall et al. (2017), Ummenhofer et al. (2017), Dansereau et al. (2017), Stone et al. (2017), Xie et al. (2017), Huang et al. (2017), Chen et al. (2017), Sagawa & Satoh (2017), Oyallon (2017), Monti et al. (2017), Fan et al. (2017), Izadinia et al. (2017), Saito et al. (2017), Yeung et al. (2017), Tran et al. (2017), Balntas et al. (2017), Chen et al. (2017), Brahmabhatt & Hays (2017), Rozumnyi et al. (2017), Homayounfar et al. (2017), Bai et al. (2017), Castrejon et al. (2017), Wang et al. (2017), Gidaris & Komodakis (2017), Wang et al. (2017), Sagonas et al. (2017), Novotny et al. (2017), Zhang et al. (2017), Real et al. (2017), Toderici et al. (2017), Yang et al. (2017), Dai et al. (2017), Lu et al. (2017), Dian et al. (2017), Xu et al. (2017), Xu et al. (2017), Chen et al. (2017), Song et al. (2017), Zhu et al. (2017), Sangkloy et al. (2017), Xu et al. (2017), Ren et al. (2017), Zhuo et al. (2017), Han et al. (2017), Yang et al. (2017), Chunseong Park et al. (2017), Li et al. (2017), Du et al. (2017), Yeh et al. (2017), Rong et al. (2017), de Vries et al. (2017), Zhu et al. (2017), Shu et al. (2017), Zhang et al. (2017), Shu et al. (2017), Zhou et al. (2017), Abdalnabi et al. (2017), Li et al. (2017), Yuan et al. (2017), Zhang et al. (2017), Wang et al. (2017), Santhanam et al. (2017), Son et al. (2017), Gan et al. (2017), Elhoseiny et al. (2017), Zhu et al. (2017), Chen et al. (2017), Wu et al. (2017), Zhang et al. (2017), Yang et al. (2017), Hayder et al. (2017), Makihara et al. (2017), Sun et al. (2017), Sasaki et al. (2017), Shou et al. (2017), Babu Sam et al. (2017), Venugopalan et al. (2017), Deng et al. (2017), Lin et al. (2017), Plummer et al. (2017), Liu et al. (2017), Alireza Golestaneh & Karam (2017), Zhang et al. (2017), Ikami et al. (2017), Dai et al. (2017), Dong et al. (2017), Jang et al. (2017), Wang et al. (2017), Dai et al. (2017), Bappy et al. (2017), Ehsan Abbasnejad et al. (2017), Zhang et al. (2017), Dou et al. (2017), Cai et al. (2017), Han et al. (2017), Kong & Fowlkes (2017), Xiao et al. (2017), Guo & Chao (2017), Yu et al. (2017), Kendall & Cipolla (2017), Guo & Chao (2017), He et al. (2017), Barath et al. (2017), Levinkov et al. (2017), Jiang & Li (2017), Rozantsev et al. (2017), Sinha et al. (2017), Lassner et al. (2017), Morgado & Vasconcelos (2017), Huang et al. (2017), Alameda-Pineda et al. (2017), Kaneko et al. (2017), Huang et al. (2017), Schober et al. (2017), Wang et al. (2017), Kokkinos (2017), Peng et al. (2017), Rocco et al. (2017), Butepage et al. (2017), Thermos et al. (2017), Xie et al. (2017), Hao et al. (2017), Chakraborty et al. (2017), Rao Jerripathula et al. (2017), Babenko & Lempitsky (2017), Kumar et al. (2017), Bogo et al. (2017), Tateno et al. (2017), Khue Le-Huu & Paragios (2017), Agudo & Moreno-Noguer (2017), Sicre et al. (2017), Yurchenko & Lempitsky (2017), Popa et al. (2017), Carreira & Zisserman (2017), Lukezic et al. (2017), Wu et al. (2017), Surh et al. (2017), Morley & Foroosh (2017), Hu et al. (2017), Li et al. (2017), Zuffi et al. (2017), Papadopoulos et al. (2017), Zhu et al. (2017), Tseng et al. (2017), Yan et al. (2017), Shamai & Kimmel (2017), Kim & Lee (2017), Zhang et al. (2017), Sheinin et al. (2017), Son Chung et al. (2017), Insafutdinov et al. (2017), Brattoli et al. (2017), Su & Hua (2017), Dutt Jain et al. (2017), Li et al. (2017), Pan et al. (2017), Joshi et al. (2017), Lu et al. (2017), Huang et al. (2017), Bau et al. (2017), Jetley et al. (2017), Kim & Lee (2017), Haussmann et al. (2017), Yao et al. (2017), Gordo & Larlus (2017), Maninchedda et al. (2017), Luo et al. (2017), Do et al. (2017), Lezama et al. (2017), Danelljan et al. (2017), Kuznetsov et al. (2017), Ren et al. (2017), Ke et al. (2017), Daniel Costea et al. (2017), Brachmann et al. (2017), Sanchez Giraldo et al. (2017), Krull et al. (2017), Tamaazousti et al. (2017), Yang et al. (2017), Pei et al. (2017), Levis et al. (2017), Nguyen et al. (2017), Qiu et al. (2017), Xia et al. (2017), Dolz et al. (2017), Nestmeyer & Gehler (2017), Alp Guler et al. (2017), Spampinato et al. (2017), Zhang et al. (2017), Papoutsakis et al. (2017), Deshpande et al. (2017), Paul et al. (2017), Clark et al. (2017), Gross et al. (2017), Larsson & Olsson (2017), Maharaj et al. (2017), Rashid et al. (2017), Goyal et al. (2017), Ufer & Ommer (2017), Ulyanov et al. (2017), Devrim Kaba et al. (2017), Kalayeh et al. (2017), Schulter et al. (2017), Sun et al. (2017), Liu et al. (2017), Lopez-Paz et al. (2017), Pavlakos et al. (2017), Kovacs et al. (2017), Rennie et al. (2017), Pavlakos et al. (2017), Chen et al. (2017), Nech & Kemelmacher-Shlizerman

(2017), Panda et al. (2017), Upchurch et al. (2017), Mousavian et al. (2017), Panda et al. (2017), Xie et al. (2017), Luo et al. (2017), Deutsch et al. (2017), Bagherinezhad et al. (2017), Bautista et al. (2017), Ye et al. (2017), Azadi et al. (2017), Vernaza & Chandraker (2017), Tzeng et al. (2017), Jaimez et al. (2017), Iyyer et al. (2017), Yatskar et al. (2017), Ramanishka et al. (2017), Tsai et al. (2017), Ke et al. (2017), Zhu et al. (2017), Amir et al. (2017), Zaki et al. (2017), Redmon & Farhadi (2017), Wang et al. (2017), Yu et al. (2017), Cao et al. (2017), Kannan et al. (2017), Huang et al. (2017), Hold-Geoffroy et al. (2017), Hyeong Hong et al. (2017), Haeffele & Vidal (2017), Zhou et al. (2017), Dai et al. (2017), Cui et al. (2017), Yu et al. (2017), Liu et al. (2017), Xu et al. (2017), Xie et al. (2017), Gao et al. (2017), Zhang et al. (2017), Mi et al. (2017), Sun et al. (2017), Zhang et al. (2017), Dixit et al. (2017), Yang et al. (2017), Branson et al. (2017), Anne Hendricks et al. (2016), Mao et al. (2016), Yang et al. (2016), Noh et al. (2016), Andreas et al. (2016), Reed et al. (2016), Akata et al. (2016), Xian et al. (2016), Kwitt et al. (2016), Gan et al. (2016), Vondrick et al. (2016), Moo Yi et al. (2016), Zhou et al. (2016), Wang et al. (2016), Hamid Rezaatofghi et al. (2016), Zhu et al. (2016), Feng et al. (2016), Liu et al. (2016), Maire et al. (2016), Khoreva et al. (2016), Yang et al. (2016), Wu et al. (2016), Ofir et al. (2016), Shen et al. (2016), Liu et al. (2016), Fu et al. (2016), Zhang et al. (2016), Singh et al. (2016), Xie et al. (2016), Yang et al. (2016), Laptev et al. (2016), Simo-Serra & Ishikawa (2016), Quan et al. (2016), Gao et al. (2016), Yang et al. (2016), Ravindran & Mittal (2016), Hu & Lin (2016), Chen et al. (2016), Chen et al. (2016), Xu et al. (2016), Gurari et al. (2016), Kihara et al. (2016), Royer et al. (2016), Erdil et al. (2016), Zhu et al. (2016), Park et al. (2016), Lotan & Irani (2016), Kulkarni et al. (2016), Pan et al. (2016), Cheng et al. (2016), Li & Yu (2016), Baek et al. (2016), Mai et al. (2016), Chen et al. (2016), Bruce et al. (2016), Wloka & Tsotsos (2016), Wang et al. (2016), Volokitin et al. (2016), Frigo et al. (2016), Calvet et al. (2016), Herranz et al. (2016), Rhinehart & Kitani (2016), Zhang et al. (2016), Pan et al. (2016), Najafi et al. (2016), Dasgupta et al. (2016), Zhu et al. (2016), Liang et al. (2016), Lu et al. (2016), Liu et al. (2016), Lee et al. (2016), Zhang et al. (2016), Liu et al. (2016), Quan et al. (2016), Jang et al. (2016), Moo Yi et al. (2016), Del Pero et al. (2016), Perazzi et al. (2016), Hasan et al. (2016), Maerki et al. (2016), Zhang et al. (2016), Shrivastava et al. (2016), He et al. (2016), Redmon et al. (2016), Gidaris & Komodakis (2016), Yu et al. (2016), Song & Xiao (2016), Kang et al. (2016), Hoffman et al. (2016), Chavali et al. (2016), Kong et al. (2016), Papadopoulos et al. (2016), Ouyang et al. (2016), Rosman et al. (2016), Bardow et al. (2016), Kadambi et al. (2016), Chen et al. (2016), Bouman et al. (2016), Gan et al. (2016), Xiao & Jae Lee (2016), Zhu et al. (2016), Yu et al. (2016), Alahi et al. (2016), Maksai et al. (2016), Yao et al. (2016), Tekin et al. (2016), Gygli et al. (2016), Shahrudiy et al. (2016), Ni et al. (2016), Pan et al. (2016), Meng et al. (2016), Shou et al. (2016), Zhang et al. (2016), Jun Koh et al. (2016), Sultani & Shah (2016), Zhang et al. (2016), Liu et al. (2016), Zhang et al. (2016), Zhang et al. (2016), Zhou et al. (2016), Zhang et al. (2016), Zhang et al. (2016), Cui et al. (2016), Wang et al. (2016), Huang et al. (2016), Lin et al. (2016), Son et al. (2016), Zhang et al. (2016), Kobayashi (2016), Dar & Moses (2016), Haque et al. (2016), Zhang et al. (2016), Xiao & Jae Lee (2016), Zhang et al. (2016), Chen et al. (2016), Zhang et al. (2016), Wang et al. (2016), Li & Yu (2016), Peng et al. (2016), Cao et al. (2016), McLaughlin et al. (2016), Cheng et al. (2016), You et al. (2016), Cho & Yoon (2016), Matsukawa et al. (2016), Wang et al. (2016), Perez-Rua et al. (2016), Hong Yoon et al. (2016), Bertinetto et al. (2016), Yang et al. (2016), Tao et al. (2016), Danelljan et al. (2016), Bibi et al. (2016), Cui et al. (2016), Diego & Hamprecht (2016), Lapin et al. (2016), Zantedeschi et al. (2016), Zhang et al. (2016), Motiian et al. (2016), Rahmani & Mian (2016), Fouhey et al. (2016), Ren & Sudderth (2016), Armeni et al. (2016), Wei et al. (2016), DeGol et al. (2016), Bendale & Boulton (2016), Wang et al. (2016), Sattler et al. (2016), Wolff et al. (2016), Pramod & Arun (2016), Hackel et al. (2016), Li & Yu (2016), Pan et al. (2016), Kim et al. (2016), Kim et al. (2016), Nguyen & Brown (2016), Ma et al. (2016), Berman et al. (2016), Nam et al. (2016), Xie et al. (2016), Lai et al. (2016), Vo et al. (2016), Chhatkuli et al. (2016), Fredriksson et al. (2016), Huang et al. (2016), Diebold et al. (2016), Eriksson et al. (2016), Joo et al. (2016), Han et al. (2016), Luo et al. (2016), Zheng & Kneip (2016), Kukulova et al. (2016), Talker et al. (2016), Danelljan et al. (2016), Gong et al. (2016), Perez-Pellitero et al. (2016), Gast et al. (2016), Hu & Lin (2016), Timofte et al. (2016), Shi et al. (2016), Chang et al. (2016), Ma et al. (2016), Zhou et al. (2016), Caba Heilbron et al. (2016), Fernando et al. (2016), Feichtenhofer et al. (2016), Ma et al. (2016), Li & Yu (2016), Singh et al. (2016), Ibrahim et al. (2016), Lillo et al. (2016), Zhu et al. (2016), Ong & Bober (2016), Heo et al. (2016), Wang et al. (2016), Wieschollek et al. (2016), Zhang et al. (2016), Quynh Nhi Tran et al. (2016), Babenko & Lempitsky (2016), Liu et al. (2016), Iscen et al. (2016), Kontogianni et al. (2016), Huang et al. (2016), Kuzborskiy et al. (2016), Zhu et al. (2016), Tang

et al. (2016), Yang et al. (2016), Wang et al. (2016), Chen et al. (2016), Tudor Ionescu et al. (2016), Liu et al. (2016), Krafka et al. (2016), Lahner et al. (2016), Sharmanska et al. (2016), Mottaghi et al. (2016), Shankar et al. (2016), Borji et al. (2016), Lee et al. (2016), Murthy et al. (2016), Qiao et al. (2016), Li & Yu (2016), Qi (2016), Lin et al. (2016), Wang et al. (2016), Wang et al. (2016), Poznanski & Wolf (2016), Gupta et al. (2016), Stewart et al. (2016), Tu et al. (2016), Feng et al. (2016), Lu et al. (2016), Daniel Costea & Nedeveschi (2016), Najibi et al. (2016), Wang et al. (2016), Thies et al. (2016), Tulyakov et al. (2016), Owens et al. (2016), Gatys et al. (2016), Hou et al. (2016), Isack et al. (2016), Kim et al. (2016), Choe et al. (2016), Wug Oh et al. (2016), Lee et al. (2016), Li & Yu (2016), Chen et al. (2016), Shin et al. (2016), Le et al. (2016), Jae Hwang et al. (2016), Shin et al. (2016), Pathak et al. (2016), Lei et al. (2016), Lebedev & Lempitsky (2016), Hayder et al. (2016), Moosavi-Dezfooli et al. (2016), Murdock et al. (2016), Iandola et al. (2016), Rastegar et al. (2016), Jacobsen et al. (2016), Singh et al. (2016), Yonetani et al. (2016), Wang et al. (2016), Soomro et al. (2016), Wang et al. (2016), Yoo et al. (2016), Yeung et al. (2016), Alfaro et al. (2016), Wang et al. (2016), Wang et al. (2016), Zhang et al. (2016), Lee et al. (2016), Li & Yu (2016), Shibata et al. (2016), Wang et al. (2016), Wang et al. (2016), Rengarajan et al. (2016), Fu et al. (2016), Lin et al. (2016), Pan et al. (2016), Zhang et al. (2016), Szegedy et al. (2016), Gupta et al. (2016), Pham et al. (2016), Bilen & Vedaldi (2016), Chan et al. (2016), Dutt Jain & Grauman (2016), Bell et al. (2016), Cheng et al. (2016), Mathe et al. (2016), Huberman & Fattal (2016), Lapuschkin et al. (2016), Zhou et al. (2016), Misra et al. (2016), Castrejon et al. (2016), Cai et al. (2016), Hu & Lin (2016), Zhu et al. (2016), Li & Yu (2016), Wei et al. (2016), Vondrick et al. (2016), Sochor et al. (2016), Liu et al. (2016), Huang et al. (2016), Bilen & Vedaldi (2016), Ramanathan et al. (2016), Mahasseni & Todorovic (2016), Charles et al. (2016), Yang et al. (2016), Xu et al. (2016), Yuan et al. (2016), Ohnishi et al. (2016), Wu et al. (2016), Choi et al. (2016), Richard & Gall (2016), Liu et al. (2016), Dai et al. (2016), Lin et al. (2016), Kundu et al. (2016), Blaha et al. (2016), Liang et al. (2016), Lin et al. (2016), Hong et al. (2016), Cordts et al. (2016), Vemulapalli et al. (2016), Ros et al. (2016), Locher et al. (2016), Kanazawa et al. (2016), Johannsen et al. (2016), Wang et al. (2016), Osman Ulusoy et al. (2016), Schillebeeckx & Pless (2016), Thomas & Taniguchi (2016), Xie et al. (2016), Magri & Fusiello (2016), Verleysen & De Vleeschouwer (2016), Saurer et al. (2016), Trager et al. (2016), Albl et al. (2016), Brachmann et al. (2016), Bushnevskiy et al. (2016), Zafeiriou et al. (2016), Zhao et al. (2016), Wu et al. (2016), Zhu et al. (2016), Piotraschke & Blanz (2016), Zhang et al. (2016), Zhang et al. (2016), Yu et al. (2016), Qin et al. (2016), Zhao et al. (2016), Ham et al. (2016), Sun et al. (2016), Thomas & Taniguchi (2016), Su et al. (2016), Li & Yu (2016), Mottaghi et al. (2016), Harakeh et al. (2016), Altwaijry et al. (2016), Singh et al. (2016), Diba et al. (2016), Cho & Yoon (2016), Hu & Lin (2016), Doumanoglou et al. (2016), Ge et al. (2016), Bertasius et al. (2016), Mattyus et al. (2016), Shuai et al. (2016), Lai et al. (2016), Chen et al. (2016), Souly & Shah (2016), Li & Yu (2016), Kuen et al. (2016), Seguin et al. (2016), Xie et al. (2016), Kolaman et al. (2016), Shi et al. (2016), Wang et al. (2016), Fu et al. (2016), Chang et al. (2016), Heber & Pock (2016), Aggarwal et al. (2016), Sheinin & Schechner (2016), Kobayashi (2016), Yago Vicente et al. (2016), Koller et al. (2016), Li & Yu (2016), Johns et al. (2016), Zhu et al. (2016), Park et al. (2016), Ji et al. (2016), Jayaraman & Grauman (2016), Huang et al. (2016), Yu et al. (2016), Zhang et al. (2016), Sevilla-Lara et al. (2016), Tsai et al. (2016), Law et al. (2016), You et al. (2016), You et al. (2016), Huang et al. (2016), Mollenhoff et al. (2016), Littwin & Wolf (2016), Sharmanska et al. (2016), Chakraborty et al. (2016), Rota Buló & Kotschieder (2016), Misra et al. (2016), Song & Xiao (2016), Lavin & Gray (2016), Li & Yu (2016), Zhang et al. (2016), Mayer et al. (2016), Feng et al. (2016), Ranftl et al. (2016), Mostegel et al. (2016), Handa et al. (2016), Jeon et al. (2016), Ben-Artzi et al. (2016), Schonberger & Frahm (2016), Wang et al. (2016), Kong et al. (2016), Dai et al. (2016), Crocco et al. (2016), Sinha et al. (2016), Zhang et al. (2016), Shi et al. (2016), Trigeorgis et al. (2016), Jourabloo & Liu (2016), Roth et al. (2016), Molchanov et al. (2016), Chang et al. (2016), Bhattarai et al. (2016), Gadot & Wolf (2016), Taniai et al. (2016), Xu et al. (2016), Ning et al. (2016), Sekii (2016), Hoshen & Peleg (2016), Nam et al. (2016), Qi (2016), Liu et al. (2016), Choi et al. (2016), Dhiman et al. (2016), Gaidon et al. (2016), Midorikawa et al. (2016), Queau et al. (2016), Qian et al. (2016), Or-El et al. (2016), Tanaka et al. (2016), Williem & Kyu Park (2016), Li & Yu (2016), Natola et al. (2016), Banerjee et al. (2016), Wang et al. (2016), Karanakis et al. (2016), Jampani et al. (2016), Ju et al. (2016), Vemulapalli et al. (2016), Zheng & Kneip (2016), Xing et al. (2016), Zhang et al. (2016), Rematas et al. (2016), Yang et al. (2016), Rahimi et al. (2016), Stumm et al. (2016), Chen et al. (2016), Hu & Lin (2016), Johnson et al. (2016), Alayrac et al. (2016), Yu et al. (2016), Pan et al. (2016), Chandrasekaran et al. (2016), Shih et al. (2016), Wu et al. (2016), Tapaswi et al. (2016),

Li & Yu (2016), You et al. (2016), Mustafa et al. (2016), Lee et al. (2016), Parashar et al. (2016), Chen et al. (2016), Park et al. (2016), Chen et al. (2016), Chu et al. (2016), Wei et al. (2016), Carreira et al. (2016), Durand et al. (2016), Xie et al. (2016), Smith et al. (2016), Deng et al. (2016), Cohen et al. (2016), Wang et al. (2016), Vemulapalli et al. (2016), Wang et al. (2016), Wu et al. (2016), Dosovitskiy & Brox (2016), Masi et al. (2016), Kan et al. (2016), Sun et al. (2016), Feng et al. (2016), Kemelmacher-Shlizerman et al. (2016), Arandjelovic (2016), Wen et al. (2016), Walecki et al. (2016), Bolkart & Wuhler (2016), Niu et al. (2016), Pishchulin et al. (2016), Kwak et al. (2016), Yasin et al. (2016), Oberweger et al. (2016), Zhou et al. (2016), Kafle & Kanan (2016), Kottur et al. (2016), Zhu et al. (2016), Wang et al. (2016), Zhang et al. (2016), Bai et al. (2016), Zhang et al. (2016), Demisse et al. (2016), Shi et al. (2016), Shi et al. (2016), Yang et al. (2016), Tsai et al. (2016), Marcos et al. (2016), Wu et al. (2016), Trigeorgis et al. (2016), Liu et al. (2016), Canevet & Fleuret (2016), Kanehira & Harada (2016), Yang et al. (2016), Yin et al. (2016), Funk & Liu (2016), Huang et al. (2016), Harandi et al. (2016), Quang Minh et al. (2016), Cheng et al. (2016), Chen et al. (2016), Mukuta & Harada (2016), Mosinska-Domanska et al. (2016), Alameda-Pineda et al. (2016), Lu et al. (2016), Kolouri et al. (2016), Wei et al. (2016), Cholakkal et al. (2016), Xu et al. (2016), Arandjelovic (2016), Dutt Jain & Grauman (2016), Kim et al. (2016), Changpinyo et al. (2016), Fu et al. (2016), Li & Yu (2016), Xu et al. (2016), Shanu et al. (2016), Huang et al. (2016), Kumar B G et al. (2016), Koniusz & Cherian (2016), Chang et al. (2016), Ha et al. (2016), Yang et al. (2016), Firman et al. (2016), Ryan Fanello et al. (2016), Wang et al. (2016), Savinov et al. (2016), Raposo & Barreto (2016), Galliani & Schindler (2016), Radenovic et al. (2016), Eckart et al. (2016), Roy & Todorovic (2016), Flynn et al. (2016), Yang et al. (2016), Yatskar et al. (2016), Booth et al. (2016), Rothe et al. (2016), Fabian Benitez-Quiroz et al. (2016), Ouyang et al. (2016), Sikka et al. (2016), Pal et al. (2016), Hu & Lin (2016), Joseph Tan et al. (2016), Shao et al. (2016), Bernard et al. (2016), Vongkulbhisal et al. (2016), Qi (2016), Zhai et al. (2016), Li & Yu (2016), Nguyen & Brown (2016), Campbell & Petersson (2016), Luo et al. (2016), Hu & Lin (2016), Harwood & Drummond (2016), He et al. (2016), Zhang et al. (2016), Honari et al. (2016), Jetley et al. (2016), Fan et al. (2016), Nhan Duong et al. (2016), Kruthiventi et al. (2016), Zhou et al. (2016), Golyanik et al. (2016), Wang et al. (2016), Oskarsson et al. (2016), Wang et al. (2016), Quan et al. (2016), Baque et al. (2016), Chin et al. (2016), Ajanthan et al. (2016), Joseph Tan et al. (2016), Bylow et al. (2016), Dicle et al. (2016), Shah et al. (2016), Qi (2016), Jug et al. (2016), Nasihatkon et al. (2016), Yang et al. (2016), Zhuang et al. (2016), Bansal et al. (2016), Al-Halah et al. (2016), Zhang et al. (2016), Wang et al. (2016), Wang et al. (2016), Wegner et al. (2016), Massa et al. (2016), Zhang et al. (2016), Yang et al. (2016),

REFERENCES

- Macario O. Cordel, II, Shaojing Fan, Zhiqi Shen, and Mohan S. Kankanhalli. Emotion-aware human attention prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nayyer Aafaq, Naveed Akhtar, Wei Liu, Syed Zulqarnain Gilani, and Ajmal Mian. Spatio-temporal dynamics and semantic attribute enriched visual encoding for video captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sathyanarayanan N. Aakur and Sudeep Sarkar. A perceptual prediction framework for self supervised event segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Davide Abati, Angelo Porrello, Simone Calderara, and Rita Cucchiara. Latent space autoregression for novelty detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mahdi Abavisani, Hamid Reza Vaezi Joze, and Vishal M. Patel. Improving the performance of unimodal dynamic hand-gesture recognition with multimodal training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ehsan Abbasnejad, Qi Wu, Qinfeng Shi, and Anton van den Hengel. What’s to know? uncertainty as a guide to asking goal-oriented questions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Mahdi Abbaspour Tehrani, Thabo Beeler, and Anselm Grundhofer. A practical method for fully automatic intrinsic camera calibration using directionally encoded light. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Abdelrahman Abdelhamed, Stephen Lin, and Michael S. Brown. A high-quality denoising dataset for smartphone cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Muhammad Abdullah Jamal, Haoxiang Li, and Boqing Gong. Deep face detector adaptation without negative transfer or catastrophic forgetting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Abnar H. Abdulnabi, Bing Shuai, Stefan Winkler, and Gang Wang. Episodic camn: Contextual attention-based memory networks with iterative feedback for scene labeling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pooya Abolghasemi, Amir Mazaheri, Mubarak Shah, and Ladislau Boloni. Pay attention! - robustifying a deep visuomotor policy through task-focused visual attention. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yazan Abu Farha, Alexander Richard, and Juergen Gall. When will you do what? - anticipating temporal occurrences of activities. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Radhakrishna Achanta and Sabine Susstrunk. Superpixels and polygons using simple non-iterative clustering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- David Acuna, Huan Ling, Amlan Kar, and Sanja Fidler. Efficient interactive annotation of segmentation datasets with polygon-rnn++. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- David Acuna, Amlan Kar, and Sanja Fidler. Devil is in the edges: Learning semantic boundaries from noisy annotations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sarah Adel Bargal, Andrea Zunino, Donghyun Kim, Jianming Zhang, Vittorio Murino, and Stan Sclaroff. Excitation backprop for rnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mahmoud Afifi, Brian Price, Scott Cohen, and Michael S. Brown. When color constancy goes wrong: Correcting improperly white-balanced images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rajat Aggarwal, Amrisha Vohra, and Anoop M. Namboodiri. Panoramic stereo videos with a single camera. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Aishwarya Agrawal, Dhruv Batra, Devi Parikh, and Aniruddha Kembhavi. Don't just assume; look and answer: Overcoming priors for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Gianluca Agresti, Henrik Schaefer, Piergiorgio Sartor, and Pietro Zanuttigh. Unsupervised domain adaptation for tof data denoising with adversarial learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Antonio Agudo and Francesc Moreno-Noguer. Dust: Dual union of spatio-temporal subspaces for monocular multiple object 3d reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Antonio Agudo, Melcior Pijoan, and Francesc Moreno-Noguer. Image collection pop-up: 3d reconstruction and clustering of rigid and non-rigid categories. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Eirikur Agustsson, Jasper R. R. Uijlings, and Vittorio Ferrari. Interactive full image segmentation by considering all regions jointly. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jiwoon Ahn and Suha Kwak. Learning pixel-level semantic affinity with image-level supervision for weakly supervised semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jiwoon Ahn, Sunghyun Cho, and Suha Kwak. Weakly supervised learning of instance segmentation with inter-pixel relations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Thalaiyasingam Ajanthan, Richard Hartley, and Mathieu Salzmann. Memory efficient max flow for multi-label submodular mrfs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Thalaiyasingam Ajanthan, Alban Desmaison, Rudy Bunel, Mathieu Salzmann, Philip H. S. Torr, and M. Pawan Kumar. Efficient linear programming for dense crfs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kenan E. Ak, Ashraf A. Kassim, Joo Hwee Lim, and Jo Yew Tham. Learning attribute representations with localization for flexible fashion search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zeynep Akata, Mateusz Malinowski, Mario Fritz, and Bernt Schiele. Multi-cue zero-shot learning with strong supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hassan Akbari, Svebor Karaman, Surabhi Bhargava, Brian Chen, Carl Vondrick, and Shih-Fu Chang. Multi-level multimodal common semantic space for image-phrase grounding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Naveed Akhtar, Ajmal Mian, and Fatih Porikli. Joint discriminative bayesian dictionary and classifier learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Naveed Akhtar, Jian Liu, and Ajmal Mian. Defense against universal adversarial perturbations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Derya Akkaynak and Tali Treibitz. A revised underwater image formation model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Derya Akkaynak and Tali Treibitz. Sea-thru: A method for removing water from underwater images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Derya Akkaynak, Tali Treibitz, Tom Shlesinger, Yossi Loya, Raz Tamir, and David Iluz. What is the space of attenuation coefficients in underwater computer vision? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yagiz Aksoy, Tunc Ozan Aydin, and Marc Pollefeys. Designing effective inter-pixel information flow for natural image matting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ziad Al-Halah and Rainer Stiefelham. Automatic discovery, association estimation and learning of semantic attributes for a thousand categories. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ziad Al-Halah, Makarand Tapaswi, and Rainer Stiefelham. Recovering the missing link: Predicting class-attribute associations for unsupervised zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Alexandre Alahi, Kratarth Goel, Vignesh Ramanathan, Alexandre Robicquet, Li Fei-Fei, and Silvio Savarese. Social lstm: Human trajectory prediction in crowded spaces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Xavier Alameda-Pineda, Elisa Ricci, Yan Yan, and Nicu Sebe. Recognizing emotions from abstract paintings using non-linear matrix completion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Xavier Alameda-Pineda, Andrea Pilzer, Dan Xu, Nicu Sebe, and Elisa Ricci. Viraliency: Pooling local virality. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Huda Alamri, Vincent Cartillier, Abhishek Das, Jue Wang, Anoop Cherian, Irfan Essa, Dhruv Batra, Tim K. Marks, Chiori Hori, Peter Anderson, Stefan Lee, and Devi Parikh. Audio visual scene-aware dialog. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jean-Baptiste Alayrac, Piotr Bojanowski, Nishant Agrawal, Josef Sivic, Ivan Laptev, and Simon Lacoste-Julien. Unsupervised learning from narrated instruction videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jean-Baptiste Alayrac, Joao Carreira, and Andrew Zisserman. The visual centrifuge: Model-free layered video representations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Cenek Albl, Zuzana Kukelova, and Tomas Pajdla. Rolling shutter absolute pose problem with known vertical direction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Cenek Albl, Zuzana Kukelova, Andrew Fitzgibbon, Jan Heller, Matej Smid, and Tomas Pajdla. On the two-view geometry of unsynchronized cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Michael A. Alcorn, Qi Li, Zhitao Gong, Chengfei Wang, Long Mai, Wei-Shinn Ku, and Anh Nguyen. Strike (with) a pose: Neural networks are easily fooled by strange poses of familiar objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Anali Alfaro, Domingo Mery, and Alvaro Soto. Action recognition in video using sparse coding and relative features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Amit Alfassy, Leonid Karlinsky, Amit Aides, Joseph Shtok, Sivan Harary, Rogerio Feris, Raja Giryes, and Alex M. Bronstein. Laso: Label-set operations networks for multi-label few-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yazeed Alharbi, Neil Smith, and Peter Wonka. Latent filter scaling for multimodal unsupervised image-to-image translation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- S. Alireza Golestaneh and Lina J. Karam. Spatially-varying blur detection based on multiscale fused and sorted transform coefficients of gradient magnitudes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Raied Aljadaany, Dipan K. Pal, and Marios Savvides. Douglas-rachford networks: Learning both the image prior and data fidelity terms for blind image deconvolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rahaf Aljundi, Punarjay Chakravarty, and Tinne Tuytelaars. Expert gate: Lifelong learning with a network of experts. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Rahaf Aljundi, Klaas Kelchtermans, and Tinne Tuytelaars. Task-free continual learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Thiemo Alldieck, Marcus Magnor, Weipeng Xu, Christian Theobalt, and Gerard Pons-Moll. Video based reconstruction of 3d people models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Thiemo Alldieck, Marcus Magnor, Bharat Lal Bhatnagar, Christian Theobalt, and Gerard Pons-Moll. Learning to reconstruct people in clothing from a single rgb camera. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Emilio J. Almazan, Ron Tal, Yiming Qian, and James H. Elder. Mcmlsd: A dynamic programming approach to line segment detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Riza Alp Guler, George Trigeorgis, Epameinondas Antonakos, Patrick Snape, Stefanos Zafeiriou, and Iasonas Kokkinos. Densereg: Fully convolutional dense shape regression in-the-wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anna Alperovich, Ole Johannsen, Michael Strecke, and Bastian Goldluecke. Light field intrinsics with a deep encoder-decoder network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hani Altwaijry, Eduard Trulls, James Hays, Pascal Fua, and Serge Belongie. Learning to match aerial images with deep attentive architectures. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Paul Amayo, Pedro Piniés, Lina M. Paz, and Paul Newman. Geometric multi-model fitting with a convex relaxation algorithm. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Arnon Amir, Brian Taba, David Berg, Timothy Melano, Jeffrey McKinstry, Carmelo Di Nolfo, Tapan Nayak, Alexander Andreopoulos, Guillaume Garreau, Marcela Mendoza, Jeff Kusnitz, Michael Debole, Steve Esser, Tobi Delbruck, Myron Flickner, and Dharmendra Modha. A low power, fully event-based gesture recognition system. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Md Amirul Islam, Mrigank Rochan, Neil D. B. Bruce, and Yang Wang. Gated feedback refinement network for dense image labeling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Md Amirul Islam, Mahmoud Kalash, and Neil D. B. Bruce. Revisiting salient object detection: Simultaneous detection, ranking, and subitizing of multiple salient objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Matthew Amodio and Smita Krishnaswamy. Travelgan: Image-to-image translation by transformation vector learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wangpeng An, Haoqian Wang, Qingyun Sun, Jun Xu, Qionghai Dai, and Lei Zhang. A pid controller approach for stochastic optimization of deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Peter Anderson, Qi Wu, Damien Teney, Jake Bruce, Mark Johnson, Niko Sünderhauf, Ian Reid, Stephen Gould, and Anton van den Hengel. Vision-and-language navigation: Interpreting visually-grounded navigation instructions in real environments. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jacob Andreas, Marcus Rohrbach, Trevor Darrell, and Dan Klein. Neural module networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Alexander Andreopoulos, Hirak J. Kashyap, Tapan K. Nayak, Arnon Amir, and Myron D. Flickner. A low power, high throughput, fully event-based stereo system. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Mykhaylo Andriluka, Umar Iqbal, Eldar Insafutdinov, Leonid Pishchulin, Anton Milan, Juergen Gall, and Bernt Schiele. Posetrack: A benchmark for human pose estimation and tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jyoti Aneja, Aditya Deshpande, and Alexander G. Schwing. Convolutional image captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mikaela Angelina Uy and Gim Hee Lee. Pointnetvlad: Deep point cloud based retrieval for large-scale place recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rushil Anirudh, Hyojin Kim, Jayaraman J. Thiagarajan, K. Aditya Mohan, Kyle Champley, and Timo Bremer. Lose the views: Limited angle ct reconstruction via implicit sinogram completion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yashas Annadani and Soma Biswas. Preserving semantic relations for zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lisa Anne Hendricks, Subhashini Venugopalan, Marcus Rohrbach, Raymond Mooney, Kate Saenko, and Trevor Darrell. Deep compositional captioning: Describing novel object categories without paired training data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Michel Antunes, Joao P. Barreto, Djamila Aouada, and Bjorn Ottersten. Unsupervised vanishing point detection and camera calibration from a single manhattan image with radial distortion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yasuhiro Aoki, Hunter Goforth, Rangaprasad Arun Srivatsan, and Simon Lucey. Pointnetlk: Robust efficient point cloud registration using pointnet. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ognjen Arandjelovic. Learnt quasi-transitive similarity for retrieval from large collections of faces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nikita Araslanov, Constantin A. Rothkopf, and Stefan Roth. Actor-critic instance segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Anil Armagan, Martin Hirzer, Peter M. Roth, and Vincent Lepetit. Learning to align semantic segmentation and 2.5d maps for geolocalization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Iro Armeni, Ozan Sener, Amir R. Zamir, Helen Jiang, Ioannis Brilakis, Martin Fischer, and Silvio Savarese. 3d semantic parsing of large-scale indoor spaces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Anurag Arnab and Philip H. S. Torr. Pixelwise instance segmentation with a dynamically instantiated network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anurag Arnab, Ondrej Miksik, and Philip H.S. Torr. On the robustness of semantic segmentation models to adversarial attacks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Anurag Arnab, Carl Doersch, and Andrew Zisserman. Exploiting temporal context for 3d human pose estimation in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Amir Arsalan Soltani, Haibin Huang, Jiajun Wu, Tejas D. Kulkarni, and Joshua B. Tenenbaum. Synthesizing 3d shapes via modeling multi-view depth maps and silhouettes with deep generative networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Aditya Arun, C.V. Jawahar, and M. Pawan Kumar. Dissimilarity coefficient based weakly supervised object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nikolaos Arvanitopoulos, Radhakrishna Achanta, and Sabine Susstrunk. Single image reflection suppression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amir Atapour-Abarghouei and Toby P. Breckon. Real-time monocular depth estimation using synthetic data with domain adaptation via image style transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Amir Atapour-Abarghouei and Toby P. Breckon. Veritatem dies aperit - temporally consistent depth prediction enabled by a multi-task geometric and semantic scene understanding approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yuval Atzmon and Gal Chechik. Adaptive confidence smoothing for generalized zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Armen Avetisyan, Manuel Dahnert, Angela Dai, Manolis Savva, Angel X. Chang, and Matthias Niessner. Scan2cad: Learning cad model alignment in rgb-d scans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Gil Avraham, Yan Zuo, and Tom Drummond. Parallel optimal transport gan. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Samaneh Azadi, Jiashi Feng, and Trevor Darrell. Learning detection with diverse proposals. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Samaneh Azadi, Matthew Fisher, Vladimir G. Kim, Zhaowen Wang, Eli Shechtman, and Trevor Darrell. Multi-content gan for few-shot font style transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sina Mokhtarzadeh Azar, Mina Ghadimi Atigh, Ahmad Nickabadi, and Alexandre Alahi. Convolutional relational machine for group activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nicolas Aziere and Sinisa Todorovic. Ensemble deep manifold similarity learning using hard proxies. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dejan Azinovic, Tzu-Mao Li, Anton Kaplanyan, and Matthias Niessner. Inverse path tracing for joint material and lighting estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Artem Babenko and Victor Lempitsky. Efficient indexing of billion-scale datasets of deep descriptors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Artem Babenko and Victor Lempitsky. Product split trees. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Deepak Babu Sam, Shiv Surya, and R. Venkatesh Babu. Switching convolutional neural network for crowd counting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Deepak Babu Sam, Neeraj N. Sajjan, R. Venkatesh Babu, and Mukundhan Srinivasan. Divide and grow: Capturing huge diversity in crowd images with incrementally growing cnn. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Seung-Hwan Baek, Inchang Choi, and Min H. Kim. Multiview image completion with space structure propagation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Seungryul Baek, Kwang In Kim, and Tae-Kyun Kim. Augmented skeleton space transfer for depth-based hand pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Seungryul Baek, Kwang In Kim, and Tae-Kyun Kim. Pushing the envelope for rgb-based dense 3d hand pose estimation via neural rendering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Timur Bagautdinov, Alexandre Alahi, Francois Fleuret, Pascal Fua, and Silvio Savarese. Social scene understanding: End-to-end multi-person action localization and collective activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Timur Bagautdinov, Chenglei Wu, Jason Saragih, Pascal Fua, and Yaser Sheikh. Modeling facial geometry using compositional vaes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hessam Bagherinezhad, Mohammad Rastegari, and Ali Farhadi. Lcnn: Lookup-based convolutional neural network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Song Bai, Xiang Bai, Zhichao Zhou, Zhaoxiang Zhang, and Longin Jan Latecki. Gift: A real-time and scalable 3d shape search engine. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Song Bai, Xiang Bai, and Qi Tian. Scalable person re-identification on supervised smoothed manifold. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Song Bai, Peng Tang, Philip H.S. Torr, and Longin Jan Latecki. Re-ranking via metric fusion for object retrieval and person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yancheng Bai, Yongqiang Zhang, Mingli Ding, and Bernard Ghanem. Finding tiny faces in the wild with generative adversarial network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christian Bailer, Kiran Varanasi, and Didier Stricker. Cnn-based patch matching for optical flow with thresholded hinge embedding loss. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Slawomir Bak and Peter Carr. One-shot metric learning for person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Arun Balajee Vasudevan, Dengxin Dai, and Luc Van Gool. Object referring in videos with language and human gaze. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Guha Balakrishnan, Amy Zhao, Adrian V. Dalca, Frédo Durand, and John Guttag. Synthesizing images of humans in unseen poses. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Vassileios Balntas, Karel Lenc, Andrea Vedaldi, and Krystian Mikolajczyk. Hpatches: A benchmark and evaluation of handcrafted and learned local descriptors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Monami Banerjee, Rudrasis Chakraborty, Edward Ofori, Michael S. Okun, David E. Viallancourt, and Baba C. Vemuri. A nonlinear regression technique for manifold valued data with applications to medical image analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Aayush Bansal, Bryan Russell, and Abhinav Gupta. Marr revisited: 2d-3d alignment via surface normal prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Aayush Bansal, Yaser Sheikh, and Deva Ramanan. Shapes and context: In-the-wild image synthesis manipulation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Linchao Bao, Baoyuan Wu, and Wei Liu. Cnn in mrf: Video object segmentation via inference in a cnn-based higher-order spatio-temporal mrf. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Wenbo Bao, Wei-Sheng Lai, Chao Ma, Xiaoyun Zhang, Zhiyong Gao, and Ming-Hsuan Yang. Depth-aware video frame interpolation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Akash Bapat and Jan-Michael Frahm. The domain transform solver. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Akash Bapat, True Price, and Jan-Michael Frahm. Rolling shutter and radial distortion are features for high frame rate multi-camera tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jawadul H. Bappy, Sujoy Paul, Ertem Tuncel, and Amit K. Roy-Chowdhury. The impact of typicality for informative representative selection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pierre Baque, Timur Bagautdinov, Francois Fleuret, and Pascal Fua. Principled parallel mean-field inference for discrete random fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Pierre Baque, Francois Fleuret, and Pascal Fua. Multi-modal mean-fields via cardinality-based clamping. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Manel Baradad, Vickie Ye, Adam B. Yedidia, Frédo Durand, William T. Freeman, Gregory W. Wornell, and Antonio Torralba. Inferring light fields from shadows. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fabien Baradel, Christian Wolf, Julien Mille, and Graham W. Taylor. Glimpse clouds: Human activity recognition from unstructured feature points. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lorenzo Baraldi, Costantino Grana, and Rita Cucchiara. Hierarchical boundary-aware neural encoder for video captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Lorenzo Baraldi, Matthijs Douze, Rita Cucchiara, and Hervé Jégou. Lamv: Learning to align and match videos with kernelized temporal layers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Daniel Barath. Five-point fundamental matrix estimation for uncalibrated cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Daniel Barath, Tekla Toth, and Levente Hajder. A minimal solution for two-view focal-length estimation using two affine correspondences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Daniel Barath, Jiri Matas, and Jana Noskova. Magsac: Marginalizing sample consensus. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Patrick Bardow, Andrew J. Davison, and Stefan Leutenegger. Simultaneous optical flow and intensity estimation from an event camera. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ehud Barnea and Ohad Ben-Shahar. Curve reconstruction via the global statistics of natural curves. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ehud Barnea and Ohad Ben-Shahar. Exploring the bounds of the utility of context for object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Jonathan T. Barron. A general and adaptive robust loss function. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jonathan T. Barron and Yun-Ta Tsai. Fast fourier color constancy. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anil S. Baslamisli, Hoang-An Le, and Theo Gevers. Cnn based learning using reflection and retinex models for intrinsic image decomposition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Favyen Bastani, Songtao He, Sofiane Abbar, Mohammad Alizadeh, Hari Balakrishnan, Sanjay Chawla, Sam Madden, and David DeWitt. Roadtracer: Automatic extraction of road networks from aerial images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Anil Batra, Suriya Singh, Guan Pang, Saikat Basu, C.V. Jawahar, and Manohar Paluri. Improved road connectivity by joint learning of orientation and segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Konstantinos Batsos, Changjiang Cai, and Philippos Mordohai. CbmV: A coalesced bidirectional matching volume for disparity estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- David Bau, Bolei Zhou, Aditya Khosla, Aude Oliva, and Antonio Torralba. Network dissection: Quantifying interpretability of deep visual representations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jean-Philippe Bauchet and Florent Lafarge. Kippi: Kinetic polygonal partitioning of images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christian F. Baumgartner, Lisa M. Koch, Kerem Can Tezcan, Jia Xi Ang, and Ender Konukoglu. Visual feature attribution using wasserstein gans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Miguel A. Bautista, Artsiom Sanakoyeu, and Bjorn Ommer. Deep unsupervised similarity learning using partially ordered sets. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Aseem Behl, Despoina Paschalidou, Simon Donne, and Andreas Geiger. Pointflownet: Learning representations for rigid motion estimation from point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sean Bell, C. Lawrence Zitnick, Kavita Bala, and Ross Girshick. Inside-outside net: Detecting objects in context with skip pooling and recurrent neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- William H. Beluch, Tim Genewein, Andreas Nürnberger, and Jan M. Köhler. The power of ensembles for active learning in image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Gil Ben-Artzi, Yoni Kasten, Shmuel Peleg, and Michael Werman. Camera calibration from dynamic silhouettes using motion barcodes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yizhak Ben-Shabat, Michael Lindenbaum, and Anath Fischer. Nesti-net: Normal estimation for unstructured 3d point clouds using convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Amor Ben Tanfous, Hassen Drira, and Boulbaba Ben Amor. Coding kendall’s shape trajectories for 3d action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Abhijit Bendale and Terrance E. Boult. Towards open set deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Rodrigo Benenson, Stefan Popov, and Vittorio Ferrari. Large-scale interactive object segmentation with human annotators. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Paul Bergmann, Michael Fauser, David Sattlegger, and Carsten Steger. Mvtec ad – a comprehensive real-world dataset for unsupervised anomaly detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dana Berman, Tali Treibitz, and Shai Avidan. Non-local image dehazing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Maxim Berman, Amal Rannen Triki, and Matthew B. Blaschko. The lovász-softmax loss: A tractable surrogate for the optimization of the intersection-over-union measure in neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Florian Bernard, Peter Gemmar, Frank Hertel, Jorge Goncalves, and Johan Thunberg. Linear shape deformation models with local support using graph-based structured matrix factorisation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Florian Bernard, Frank R. Schmidt, Johan Thunberg, and Daniel Cremers. A combinatorial solution to non-rigid 3d shape-to-image matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Florian Bernard, Christian Theobalt, and Michael Moeller. Ds*: Tighter lifting-free convex relaxations for quadratic matching problems. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Gedas Bertasius, Jianbo Shi, and Lorenzo Torresani. Semantic segmentation with boundary neural fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Gedas Bertasius, Lorenzo Torresani, Stella X. Yu, and Jianbo Shi. Convolutional random walk networks for semantic image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gedas Bertasius, Aaron Chan, and Jianbo Shi. Egocentric basketball motion planning from a single first-person image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Luca Bertinetto, Jack Valmadre, Stuart Golodetz, Ondrej Miksik, and Philip H. S. Torr. Staple: Complementary learners for real-time tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Shweta Bhardwaj, Mukundhan Srinivasan, and Mitesh M. Khapra. Efficient video classification using fewer frames. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Apratim Bhattacharyya, Mario Fritz, and Bernt Schiele. Long-term on-board prediction of people in traffic scenes under uncertainty. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Binod Bhattarai, Gaurav Sharma, and Frederic Jurie. Cp-mtml: Coupled projection multi-task metric learning for large scale face retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ayan Kumar Bhunia, Abhirup Das, Ankan Kumar Bhunia, Perla Sai Raj Kishore, and Partha Pratim Roy. Handwriting recognition in low-resource scripts using adversarial learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- JiaWang Bian, Wen-Yan Lin, Yasuyuki Matsushita, Sai-Kit Yeung, Tan-Dat Nguyen, and Ming-Ming Cheng. Gms: Grid-based motion statistics for fast, ultra-robust feature correspondence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Simone Bianco and Claudio Cusano. Quasi-unsupervised color constancy. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Adel Bibi, Tianzhu Zhang, and Bernard Ghanem. 3d part-based sparse tracker with automatic synchronization and registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Adel Bibi, Hani Itani, and Bernard Ghanem. Fftlasso: Large-scale lasso in the fourier domain. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Adel Bibi, Modar Alfadly, and Bernard Ghanem. Analytic expressions for probabilistic moments of pl-dnn with gaussian input. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pia Bideau, Aruni RoyChowdhury, Rakesh R. Menon, and Erik Learned-Miller. The best of both worlds: Combining cnns and geometric constraints for hierarchical motion segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hakan Bilen and Andrea Vedaldi. Weakly supervised deep detection networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Piotr Bilinski and Victor Prisacariu. Dense decoder shortcut connections for single-pass semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tolga Birdal and Umut Simsekli. Probabilistic permutation synchronization using the riemannian structure of the birkhoff polytope. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tolga Birdal, Benjamin Busam, Nassir Navab, Slobodan Ilic, and Peter Sturm. A minimalist approach to type-agnostic detection of quadrics in point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ali Furkan Biten, Lluís Gómez, Marçal Rusinol, and Dimosthenis Karatzas. Good news, everyone! context driven entity-aware captioning for news images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Maros Blaha, Christoph Vogel, Audrey Richard, Jan D. Wegner, Thomas Pock, and Konrad Schindler. Large-scale semantic 3d reconstruction: An adaptive multi-resolution model for multi-class volumetric labeling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nathaniel Blanchard, Jeffery Kinnison, Brandon RichardWebster, Pouya Bashivan, and Walter J. Scheirer. A neurobiological evaluation metric for neural network model search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Henryk Blasinski, Joyce Farrell, and Brian Wandell. Designing illuminant spectral power distributions for surface classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yochai Blau and Tomer Michaeli. The perception-distortion tradeoff. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Michael Bloesch, Jan Czarnowski, Ronald Clark, Stefan Leutenegger, and Andrew J. Davison. Codeslam — learning a compact, optimisable representation for dense visual slam. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Federica Bogo, Javier Romero, Gerard Pons-Moll, and Michael J. Black. Dynamic faust: Registering human bodies in motion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Timo Bolkart and Stefanie Wuhler. A robust multilinear model learning framework for 3d faces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- James Booth, Anastasios Roussos, Stefanos Zafeiriou, Allan Ponniah, and David Dunaway. A 3d morphable model learnt from 10,000 faces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- James Booth, Epameinondas Antonakos, Stylianos Ploumpis, George Trigeorgis, Yannis Panagakis, and Stefanos Zafeiriou. 3d face morphable models "in-the-wild". In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guido Borghi, Marco Venturelli, Roberto Vezzani, and Rita Cucchiara. Poseidon: Face-from-depth for driver pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ali Borji, Saeed Izadi, and Laurent Itti. ilab-20m: A large-scale controlled object dataset to investigate deep learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Adnane Boukhayma, Jean-Sebastien Franco, and Edmond Boyer. Surface motion capture transfer with gaussian process regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Adnane Boukhayma, Rodrigo de Bem, and Philip H.S. Torr. 3d hand shape and pose from images in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Katherine L. Bouman, Michael D. Johnson, Daniel Zoran, Vincent L. Fish, Sheperd S. Doleman, and William T. Freeman. Computational imaging for vlbi image reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Giorgos Bouritsas, Petros Koutras, Athanasia Zlatintsi, and Petros Maragos. Multimodal visual concept learning with weakly supervised techniques. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Konstantinos Bousmalis, Nathan Silberman, David Dohan, Dumitru Erhan, and Dilip Krishnan. Unsupervised pixel-level domain adaptation with generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Katarzyna Bozek, Laetitia Hebert, Alexander S. Mikhayev, and Greg J. Stephens. Towards dense object tracking in a 2d honeybee hive. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lior Bracha and Gal Chechik. Informative object annotations: Tell me something i don't know. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Eric Brachmann and Carsten Rother. Learning less is more - 6d camera localization via 3d surface regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Eric Brachmann, Frank Michel, Alexander Krull, Michael Ying Yang, Stefan Gumhold, and carsten Rother. Uncertainty-driven 6d pose estimation of objects and scenes from a single rgb image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Eric Brachmann, Alexander Krull, Sebastian Nowozin, Jamie Shotton, Frank Michel, Stefan Gumhold, and Carsten Rother. Dsac - differentiable ransac for camera localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Samarth Brahmbhatt and James Hays. Deepnav: Learning to navigate large cities. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Samarth Brahmbhatt, Jinwei Gu, Kihwan Kim, James Hays, and Jan Kautz. Geometry-aware learning of maps for camera localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Samarth Brahmbhatt, Cusuh Ham, Charles C. Kemp, and James Hays. Contactdb: Analyzing and predicting grasp contact via thermal imaging. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Frederic Branchaud-Charron, Andrew Achkar, and Pierre-Marc Jodoin. Spectral metric for dataset complexity assessment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Steve Branson, Grant Van Horn, and Pietro Perona. Lean crowdsourcing: Combining humans and machines in an online system. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Biagio Brattoli, Uta Buchler, Anna-Sophia Wahl, Martin E. Schwab, and Bjorn Ommer. Lstm self-supervision for detailed behavior analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Garrick Brazil and Xiaoming Liu. Pedestrian detection with autoregressive network phases. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jesus Briales and Javier Gonzalez-Jimenez. Convex global 3d registration with lagrangian duality. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jesus Briales, Laurent Kneip, and Javier Gonzalez-Jimenez. A certifiably globally optimal solution to the non-minimal relative pose problem. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tim Brooks and Jonathan T. Barron. Learning to synthesize motion blur. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sofia Broome, Karina Bech Gleeurup, Pia Haubro Andersen, and Hedvig Kjellstrom. Dynamics are important for the recognition of equine pain in video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Neil D. B. Bruce, Christopher Catton, and Sasa Janjic. A deeper look at saliency: Feature contrast, semantics, and beyond. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Shyamal Buch, Victor Escorcia, Chuanqi Shen, Bernard Ghanem, and Juan Carlos Niebles. Sst: Single-stream temporal action proposals. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Adrian Bulat and Georgios Tzimiropoulos. Super-fan: Integrated facial landmark localization and super-resolution of real-world low resolution faces in arbitrary poses with gans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Philippe Burlina, Neil Joshi, and I-Jeng Wang. Where’s wally now? deep generative and discriminative embeddings for novelty detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Andrey Bushnevskiy, Lorenzo Sorigi, and Bodo Rosenhahn. Multicamera calibration from visible and mirrored epipoles. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Judith Butepage, Michael J. Black, Danica Kragic, and Hedvig Kjellstrom. Deep representation learning for human motion prediction and classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Erik Bylow, Carl Olsson, Fredrik Kahl, and Mikael Nilsson. Minimizing the maximal rank. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Fabian Caba Heilbron, Juan Carlos Niebles, and Bernard Ghanem. Fast temporal activity proposals for efficient detection of human actions in untrimmed videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Fabian Caba Heilbron, Wayner Barrios, Victor Escorcia, and Bernard Ghanem. Scc: Semantic context cascade for efficient action detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Jose Caballero, Christian Ledig, Andrew Aitken, Alejandro Acosta, Johannes Totz, Zehan Wang, and Wenzhe Shi. Real-time video super-resolution with spatio-temporal networks and motion compensation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Remi Cadene, Hedi Ben-younes, Matthieu Cord, and Nicolas Thome. Murel: Multimodal relational reasoning for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sergi Caelles, Kevis-Kokitsi Maninis, Jordi Pont-Tuset, Laura Leal-Taixe, Daniel Cremers, and Luc Van Gool. One-shot video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Holger Caesar, Jasper Uijlings, and Vittorio Ferrari. Coco-stuff: Thing and stuff classes in context. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Nathan D. Cahill, Tyler L. Hayes, Renee T. Meinhold, and John F. Hamilton. Compassionately conservative balanced cuts for image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lile Cai, Bin Zhao, Zhe Wang, Jie Lin, Chuan Sheng Foo, Mohamed Sabry Aly, and Vijay Chandrasekhar. Maxpoolnms: Getting rid of nms bottlenecks in two-stage object detectors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Qi Cai, Yingwei Pan, Ting Yao, Chenggang Yan, and Tao Mei. Memory matching networks for one-shot image recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sijia Cai, Lei Zhang, Wangmeng Zuo, and Xiangchu Feng. A probabilistic collaborative representation based approach for pattern classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zhaowei Cai, Xiaodong He, Jian Sun, and Nuno Vasconcelos. Deep learning with low precision by half-wave gaussian quantization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Juan C. Caicedo, Claire McQuin, Allen Goodman, Shantanu Singh, and Anne E. Carpenter. Weakly supervised learning of single-cell feature embeddings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fatih Cakir, Kun He, Xide Xia, Brian Kulis, and Stan Sclaroff. Deep metric learning to rank. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Lilian Calvet, Pierre Gurdjos, Carsten Griwodz, and Simone Gasparini. Detection and accurate localization of circular fiducials under highly challenging conditions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Dylan Campbell and Lars Petersson. Gogma: Globally-optimal gaussian mixture alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Dylan Campbell, Lars Petersson, Laurent Kneip, Hongdong Li, and Stephen Gould. The alignment of the spheres: Globally-optimal spherical mixture alignment for camera pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Federico Camposeco, Torsten Sattler, Andrea Cohen, Andreas Geiger, and Marc Pollefeys. Toroidal constraints for two-point localization under high outlier ratios. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Federico Camposeco, Andrea Cohen, Marc Pollefeys, and Torsten Sattler. Hybrid camera pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Federico Camposeco, Andrea Cohen, Marc Pollefeys, and Torsten Sattler. Hybrid scene compression for visual localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hakki Can Karaimer and Michael S. Brown. Improving color reproduction accuracy on cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Olivier Canevet and Francois Fleuret. Large scale hard sample mining with monte carlo tree search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jiale Cao, Yanwei Pang, and Xuelong Li. Pedestrian detection inspired by appearance constancy and shape symmetry. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Qingxing Cao, Liang Lin, Yukai Shi, Xiaodan Liang, and Guanbin Li. Attention-aware face hallucination via deep reinforcement learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yue Cao, Mingsheng Long, Bin Liu, and Jianmin Wang. Deep cauchy hashing for hamming space retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zhangjie Cao, Kaichao You, Mingsheng Long, Jianmin Wang, and Qiang Yang. Learning to transfer examples for partial domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Fabio M. Carlucci, Antonio D’Innocente, Silvia Bucci, Barbara Caputo, and Tatiana Tommasi. Domain generalization by solving jigsaw puzzles. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Joao Carreira and Andrew Zisserman. Quo vadis, action recognition? a new model and the kinetics dataset. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Joao Carreira, Pulkit Agrawal, Katerina Fragkiadaki, and Jitendra Malik. Human pose estimation with iterative error feedback. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Lluís Castrejon, Yusuf Aytar, Carl Vondrick, Hamed Pirsiavash, and Antonio Torralba. Learning aligned cross-modal representations from weakly aligned data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Lluís Castrejon, Kaustav Kundu, Raquel Urtasun, and Sanja Fidler. Annotating object instances with a polygon-rnn. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tommaso Cavallari, Stuart Golodetz, Nicholas A. Lord, Julien Valentin, Luigi Di Stefano, and Philip H. S. Torr. On-the-fly adaptation of regression forests for online camera relocalisation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Lorenzo Cerrone, Alexander Zeilmann, and Fred A. Hamprecht. End-to-end learned random walker for seeded image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hakan Cevikalp and Bill Triggs. Polyhedral conic classifiers for visual object detection and classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Florian Chabot, Mohamed Chaouch, Jaonary Rabarisoa, Celine Teuliere, and Thierry Chateau. Deep manta: A coarse-to-fine many-task network for joint 2d and 3d vehicle analysis from monocular image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Rohan Chabra, Julian Straub, Christopher Sweeney, Richard Newcombe, and Henry Fuchs. Stereodnet: Dilated residual stereonet. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rudrasis Chakraborty, Dohyung Seo, and Baba C. Vemuri. An efficient exact-pga algorithm for constant curvature manifolds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Rudrasis Chakraborty, Soren Hauberg, and Baba C. Vemuri. Intrinsic grassmann averages for online linear and robust subspace learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jacob Chan, Jimmy Addison Lee, and Qian Kemao. Border: An oriented rectangles approach to texture-less object recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jacob Chan, Jimmy Addison Lee, and Qian Kemao. Bind: Binary integrated net descriptors for texture-less object recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Rohan Chandra, Uttaran Bhattacharya, Aniket Bera, and Dinesh Manocha. Taphic: Trajectory prediction in dense and heterogeneous traffic using weighted interactions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Siddhartha Chandra, Camille Couprie, and Iasonas Kokkinos. Deep spatio-temporal random fields for efficient video segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Arjun Chandrasekaran, Ashwin K. Vijayakumar, Stanislaw Antol, Mohit Bansal, Dhruv Batra, C. Lawrence Zitnick, and Devi Parikh. We are humor beings: Understanding and predicting visual humor. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Che-Han Chang, Chun-Nan Chou, and Edward Y. Chang. Clkn: Cascaded lucas-kanade networks for image alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Huiwen Chang, Jingwan Lu, Fisher Yu, and Adam Finkelstein. Pairedcyclegan: Asymmetric style transfer for applying and removing makeup. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Wei-Lun Chang, Hui-Po Wang, Wen-Hsiao Peng, and Wei-Chen Chiu. All about structure: Adapting structural information across domains for boosting semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xiaojun Chang, Yao-Liang Yu, Yi Yang, and Eric P. Xing. They are not equally reliable: Semantic event search using differentiated concept classifiers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Soravit Changpinyo, Wei-Lun Chao, Boqing Gong, and Fei Sha. Synthesized classifiers for zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yu-Wei Chao, Jimei Yang, Brian Price, Scott Cohen, and Jia Deng. Forecasting human dynamics from static images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yu-Wei Chao, Sudheendra Vijayanarasimhan, Bryan Seybold, David A. Ross, Jia Deng, and Rahul Sukthankar. Rethinking the faster r-cnn architecture for temporal action localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- James Charles, Tomas Pfister, Derek Magee, David Hogg, and Andrew Zisserman. Personalizing human video pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Prithvijit Chattopadhyay, Ramakrishna Vedantam, Ramprasaath R. Selvaraju, Dhruv Batra, and Devi Parikh. Counting everyday objects in everyday scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Bindita Chaudhuri, Noranart Vesdapunt, and Baoyuan Wang. Joint face detection and facial motion retargeting for multiple faces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Neelima Chavali, Harsh Agrawal, Aroma Mahendru, and Dhruv Batra. Object-proposal evaluation protocol is 'gameable'. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tatjana Chavdarova, Pierre Baqué, Stéphane Bouquet, Andrii Maksai, Cijo Jose, Timur Bagautdinov, Louis Lettry, Pascal Fua, Luc Van Gool, and François Fleuret. Wildtrack: A multi-camera hd dataset for dense unsupervised pedestrian detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Da Chen, Jean-Marie Mirebeau, and Laurent D. Cohen. A new finsler minimal path model with curvature penalization for image segmentation and closed contour detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Long Chen, Hanwang Zhang, Jun Xiao, Wei Liu, and Shih-Fu Chang. Zero-shot visual recognition using semantics-preserving adversarial embedding networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Weihua Chen, Xiaotang Chen, Jianguo Zhang, and Kaiqi Huang. Beyond triplet loss: A deep quadruplet network for person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yunpeng Chen, Marcus Rohrbach, Zhicheng Yan, Yan Shuicheng, Jiashi Feng, and Yannis Kalantidis. Graph-based global reasoning networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dongliang Cheng, Abdelrahman Abdelhamed, Brian Price, Scott Cohen, and Michael S. Brown. Two illuminant estimation and user correction preference. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hao Cheng, Dongze Lian, Bowen Deng, Shenghua Gao, Tao Tan, and Yanlin Geng. Local to global learning: Gradually adding classes for training deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Lechao Cheng, Chengyi Zhang, and Zicheng Liao. Intrinsic image transformation via scale space decomposition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yanhua Cheng, Rui Cai, Zhiwei Li, Xin Zhao, and Kaiqi Huang. Locality-sensitive deconvolution networks with gated fusion for rgb-d indoor semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anoop Cherian, Basura Fernando, Mehrtash Harandi, and Stephen Gould. Generalized rank pooling for activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anoop Cherian, Suvrit Sra, Stephen Gould, and Richard Hartley. Non-linear temporal subspace representations for activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ajad Chhatkuli, Daniel Pizarro, Toby Collins, and Adrien Bartoli. Inextensible non-rigid shape-from-motion by second-order cone programming. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tat-Jun Chin, Yang Heng Kee, Anders Eriksson, and Frank Neumann. Guaranteed outlier removal with mixed integer linear programs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Wonwoong Cho, Sungha Choi, David Keetae Park, Inkyu Shin, and Jaegul Choo. Image-to-image translation via group-wise deep whitening-and-coloring transformation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yeong-Jun Cho and Kuk-Jin Yoon. Improving person re-identification via pose-aware multi-shot matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Gyeongmin Choe, Srinivasa G. Narasimhan, and In So Kweon. Simultaneous estimation of near ir brdf and fine-scale surface geometry. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Junsuk Choe and Hyunjung Shim. Attention-based dropout layer for weakly supervised object localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jinsoo Choi, Tae-Hyun Oh, and In So Kweon. Video-story composition via plot analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jongwon Choi, Hyung Jin Chang, Sangdoo Yun, Tobias Fischer, Yiannis Demiris, and Jin Young Choi. Attentional correlation filter network for adaptive visual tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jongwon Choi, Hyung Jin Chang, Tobias Fischer, Sangdoo Yun, Kyuewang Lee, Jiyeoup Jeong, Yiannis Demiris, and Jin Young Choi. Context-aware deep feature compression for high-speed visual tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hisham Cholakkal, Jubin Johnson, and Deepu Rajan. Backtracking scspm image classifier for weakly supervised top-down saliency. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hisham Cholakkal, Guolei Sun, Fahad Shahbaz Khan, and Ling Shao. Object counting and instance segmentation with image-level supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Francois Chollet. Xception: Deep learning with depthwise separable convolutions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vasileios Choutas, Philippe Weinzaepfel, Jérôme Revaud, and Cordelia Schmid. Potion: Pose motion representation for action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christopher Choy, JunYoung Gwak, and Silvio Savarese. 4d spatio-temporal convnets: Minkowski convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Gordon Christie, Neil Fendley, James Wilson, and Ryan Mukherjee. Functional map of the world. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hang Chu, Wei-Chiu Ma, Kaustav Kundu, Raquel Urtasun, and Sanja Fidler. Surfconv: Bridging 3d and 2d convolution for rgb-d images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Wen-Hsuan Chu, Yu-Jhe Li, Jing-Cheng Chang, and Yu-Chiang Frank Wang. Spot and learn: A maximum-entropy patch sampler for few-shot image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xiao Chu, Wanli Ouyang, Hongsheng Li, and Xiaogang Wang. Structured feature learning for pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Xiao Chu, Wei Yang, Wanli Ouyang, Cheng Ma, Alan L. Yuille, and Xiaogang Wang. Multi-context attention for human pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ching-Yao Chuang, Jiaman Li, Antonio Torralba, and Sanja Fidler. Learning to act properly: Predicting and explaining affordances from images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Cesc Chunseong Park, Byeongchang Kim, and Gunhee Kim. Attend to you: Personalized image captioning with context sequence memory networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Necati Cihan Camgoz, Simon Hadfield, Oscar Koller, Hermann Ney, and Richard Bowden. Neural sign language translation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ronald Clark, Sen Wang, Andrew Markham, Niki Trigoni, and Hongkai Wen. Vidloc: A deep spatio-temporal model for 6-dof video-clip relocalization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gad Cohen and Daphna Weinshall. Hidden layers in perceptual learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Nadav Cohen, Or Sharir, and Amnon Shashua. Deep simnets. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Forrester Cole, David Belanger, Dilip Krishnan, Aaron Sarna, Inbar Mosseri, and William T. Freeman. Synthesizing normalized faces from facial identity features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- John Collomosse, Tu Bui, and Hailin Jin. Livesketch: Query perturbations for guided sketch-based visual search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Marius Cordts, Mohamed Omran, Sebastian Ramos, Timo Rehfeld, Markus Enzweiler, Rodrigo Benenson, Uwe Franke, Stefan Roth, and Bernt Schiele. The cityscapes dataset for semantic urban scene understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ciprian A. Corneanu, Meysam Madadi, Sergio Escalera, and Aleix M. Martinez. What does it mean to learn in deep networks? and, how does one detect adversarial attacks? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Marcella Cornia, Lorenzo Baraldi, and Rita Cucchiara. Show, control and tell: A framework for generating controllable and grounded captions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ionut Cosmin Duta, Bogdan Ionescu, Kiyoharu Aizawa, and Nicu Sebe. Spatio-temporal vector of locally max pooled features for action recognition in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Luca Cosmo, Mikhail Panine, Arianna Rampini, Maks Ovsjanikov, Michael M. Bronstein, and Emanuele Rodola. Isospectralization, or how to hear shape, style, and correspondence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nieves Crasto, Philippe Weinzaepfel, Karteek Alahari, and Cordelia Schmid. Mars: Motion-augmented rgb stream for action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Marco Crocco, Cosimo Rubino, and Alessio Del Bue. Structure from motion with objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Ekin D. Cubuk, Barret Zoph, Dandelion Mane, Vijay Vasudevan, and Quoc V. Le. Autoaugment: Learning augmentation strategies from data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Guillem Cucurull, Perouz Taslakian, and David Vazquez. Context-aware visual compatibility prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Daniel Cudeiro, Timo Bolkart, Cassidy Laidlaw, Anurag Ranjan, and Michael J. Black. Capture, learning, and synthesis of 3d speaking styles. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hainan Cui, Xiang Gao, Shuhan Shen, and Zhanyi Hu. Hsfm: Hybrid structure-from-motion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yin Cui, Feng Zhou, Yuanqing Lin, and Serge Belongie. Fine-grained categorization and dataset bootstrapping using deep metric learning with humans in the loop. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yin Cui, Yang Song, Chen Sun, Andrew Howard, and Serge Belongie. Large scale fine-grained categorization and domain-specific transfer learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zhiming Cui, Changjian Li, and Wenping Wang. Toothnet: Automatic tooth instance segmentation and identification from cone beam ct images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Cheng Da, Shibiao Xu, Kun Ding, Gaofeng Meng, Shiming Xiang, and Chunhong Pan. Amvh: Asymmetric multi-valued hashing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Angela Dai, Daniel Ritchie, Martin Bokeloh, Scott Reed, Jürgen Sturm, and Matthias Nießner. Scancomplete: Large-scale scene completion and semantic segmentation for 3d scans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Bo Dai, Yuqi Zhang, and Dahua Lin. Detecting visual relationships with deep relational networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jifeng Dai, Kaiming He, and Jian Sun. Instance-aware semantic segmentation via multi-task network cascades. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kenan Dai, Dong Wang, Huchuan Lu, Chong Sun, and Jianhua Li. Visual tracking via adaptive spatially-regularized correlation filters. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Adrian V. Dalca, John Guttag, and Mert R. Sabuncu. Anatomical priors in convolutional networks for unsupervised biomedical segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Martin Danelljan, Gustav Hager, Fahad Shahbaz Khan, and Michael Felsberg. Adaptive decontamination of the training set: A unified formulation for discriminative visual tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Martin Danelljan, Goutam Bhat, Fahad Shahbaz Khan, and Michael Felsberg. Eco: Efficient convolution operators for tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Martin Danelljan, Goutam Bhat, Fahad Shahbaz Khan, and Michael Felsberg. Atom: Accurate tracking by overlap maximization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Arthur Daniel Costea and Sergiu Nedevschi. Semantic channels for fast pedestrian detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Arthur Daniel Costea, Robert Varga, and Sergiu Nedevschi. Fast boosting based detection using scale invariant multimodal multiresolution filtered features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Donald G. Dansereau, Glenn Schuster, Joseph Ford, and Gordon Wetzstein. A wide-field-of-view monocentric light field camera. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Donald G. Dansereau, Bernd Girod, and Gordon Wetzstein. Liff: Light field features in scale and depth. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mor Dar and Yael Moses. Temporal epipolar regions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Abhishek Das, Satwik Kottur, Khushi Gupta, Avi Singh, Deshraj Yadav, Jose M. F. Moura, Devi Parikh, and Dhruv Batra. Visual dialog. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Abhishek Das, Samyak Datta, Georgia Gkioxari, Stefan Lee, Devi Parikh, and Dhruv Batra. Embodied question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Saumitro Dasgupta, Kuan Fang, Kevin Chen, and Silvio Savarese. Delay: Robust spatial layout estimation for cluttered indoor scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Achal Dave, Olga Russakovsky, and Deva Ramanan. Predictive-corrective networks for action detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Harm de Vries, Florian Strub, Sarath Chandar, Olivier Pietquin, Hugo Larochelle, and Aaron Courville. Guesswhat?! visual object discovery through multi-modal dialogue. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Joseph DeGol, Mani Golparvar-Fard, and Derek Hoiem. Geometry-informed material recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tali Dekel, Michael Rubinstein, Ce Liu, and William T. Freeman. On the effectiveness of visible watermarks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tali Dekel, Chuang Gan, Dilip Krishnan, Ce Liu, and William T. Freeman. Sparse, smart contours to represent and edit images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Luca Del Pero, Susanna Ricco, Rahul Sukthankar, and Vittorio Ferrari. Discovering the physical parts of an articulated object class from multiple videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Girum G. Demisse, Djamila Aouada, and Bjorn Ottersten. Similarity metric for curved shapes in euclidean space. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Haowen Deng, Tolga Birdal, and Slobodan Ilic. Ppfnet: Global context aware local features for robust 3d point matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Haowen Deng, Tolga Birdal, and Slobodan Ilic. 3d local features for direct pairwise registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhiwei Deng, Arash Vahdat, Hexiang Hu, and Greg Mori. Structure inference machines: Recurrent neural networks for analyzing relations in group activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Zhiwei Deng, Rajitha Navarathna, Peter Carr, Stephan Mandt, Yisong Yue, Iain Matthews, and Greg Mori. Factorized variational autoencoders for modeling audience reactions to movies. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mohammad Mahdi Derakhshani, Saeed Masoudnia, Amir Hossein Shaker, Omid Mersa, Mohammad Amin Sadeghi, Mohammad Rastegari, and Babak N. Araabi. Assisted excitation of activations: A learning technique to improve object detectors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aditya Deshpande, Jiajun Lu, Mao-Chuang Yeh, Min Jin Chong, and David Forsyth. Learning diverse image colorization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ishan Deshpande, Ziyu Zhang, and Alexander G. Schwing. Generative modeling using the sliced wasserstein distance. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ishan Deshpande, Yuan-Ting Hu, Ruoyu Sun, Ayis Pyrros, Nasir Siddiqui, Sanmi Koyejo, Zhizhen Zhao, David Forsyth, and Alexander G. Schwing. Max-sliced wasserstein distance and its use for gans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Shay Deutsch, Soheil Kolouri, Kyungnam Kim, Yuri Owechko, and Stefano Soatto. Zero shot learning via multi-scale manifold regularization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mustafa Devrim Kaba, Mustafa Gokhan Uzunbas, and Ser Nam Lim. A reinforcement learning approach to the view planning problem. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Sounak Dey, Pau Riba, Anjan Dutta, Josep Lladós, and Yi-Zhe Song. Doodle to search: Practical zero-shot sketch-based image retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Arturo Deza, Amit Surana, and Miguel P. Eckstein. Assessment of faster r-cnn in man-machine collaborative search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Prithviraj Dhar, Rajat Vikram Singh, Kuan-Chuan Peng, Ziyang Wu, and Rama Chellappa. Learning without memorizing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aditya Dhawale, Kumar Shaurya Shankar, and Nathan Michael. Fast monte-carlo localization on aerial vehicles using approximate continuous belief representations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Vikas Dhiman, Quoc-Huy Tran, Jason J. Corso, and Manmohan Chandraker. A continuous occlusion model for road scene understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Renwei Dian, Leyuan Fang, and Shutao Li. Hyperspectral image super-resolution via non-local sparse tensor factorization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Raul Diaz and Amit Marathe. Soft labels for ordinal regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ali Diba, Ali Mohammad Pazandeh, Hamed Pirsiavash, and Luc Van Gool. Deepcamp: Deep convolutional action attribute mid-level patterns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ali Diba, Vivek Sharma, Ali Pazandeh, Hamed Pirsiavash, and Luc Van Gool. Weakly supervised cascaded convolutional networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Endri Dibra, Himanshu Jain, Cengiz Oztireli, Remo Ziegler, and Markus Gross. Human shape from silhouettes using generative hks descriptors and cross-modal neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Caglayan Dicle, Burak Yilmaz, Octavia Camps, and Mario Sznaiier. Solving temporal puzzles. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Maximilian Diebold, Bernd Jahne, and Alexander Gatto. Heterogeneous light fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ferran Diego and Fred A. Hamprecht. Structured regression gradient boosting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- N. Dinesh Reddy, Minh Vo, and Srinivasa G. Narasimhan. Carfusion: Combining point tracking and part detection for dynamic 3d reconstruction of vehicles. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Henghui Ding, Xudong Jiang, Bing Shuai, Ai Qun Liu, and Gang Wang. Context contrasted feature and gated multi-scale aggregation for scene segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jian Ding, Nan Xue, Yang Long, Gui-Song Xia, and Qikai Lu. Learning roi transformer for oriented object detection in aerial images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhengming Ding, Ming Shao, and Yun Fu. Low-rank embedded ensemble semantic dictionary for zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mandar Dixit, Roland Kwitt, Marc Niethammer, and Nuno Vasconcelos. Aga: Attribute-guided augmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Konstantin Dmitriev and Arie E. Kaufman. Learning multi-class segmentations from single-class datasets. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Thanh-Toan Do, Dang-Khoa Le Tan, Trung T. Pham, and Ngai-Man Cheung. Simultaneous feature aggregating and hashing for large-scale image search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Thanh-Toan Do, Toan Tran, Ian Reid, Vijay Kumar, Tuan Hoang, and Gustavo Carneiro. A theoretically sound upper bound on the triplet loss for improving the efficiency of deep distance metric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Pelin Dogan, Boyang Li, Leonid Sigal, and Markus Gross. A neural multi-sequence alignment technique (neumatch). In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pelin Dogan, Leonid Sigal, and Markus Gross. Neural sequential phrase grounding (seqground). In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Pierre Dognin, Igor Melnyk, Youssef Mroueh, Jerret Ross, and Tom Sercu. Adversarial semantic alignment for improved image captions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Brian Dolhansky and Cristian Canton Ferrer. Eye in-painting with exemplar generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jose Dolz, Ismail Ben Ayed, and Christian Desrosiers. Dope: Distributed optimization for pairwise energies. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Jingming Dong, Xiaohan Fei, and Stefano Soatto. Visual-inertial-semantic scene representation for 3d object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Xuanyi Dong and Yi Yang. Searching for a robust neural architecture in four gpu hours. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xuanyi Dong, Shou-I Yu, Xinshuo Weng, Shih-En Wei, Yi Yang, and Yaser Sheikh. Supervision-by-registration: An unsupervised approach to improve the precision of facial landmark detectors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Simon Donne and Andreas Geiger. Learning non-volumetric depth fusion using successive reprojections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Garoe Dorta, Sara Vicente, Lourdes Agapito, Neill D. F. Campbell, and Ivor Simpson. Structured uncertainty prediction networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Alexey Dosovitskiy and Thomas Brox. Inverting visual representations with convolutional networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Pengfei Dou, Shishir K. Shah, and Ioannis A. Kakadiaris. End-to-end 3d face reconstruction with deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hazel Doughty, Dima Damen, and Walterio Mayol-Cuevas. Who’s better? who’s best? pairwise deep ranking for skill determination. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hazel Doughty, Walterio Mayol-Cuevas, and Dima Damen. The pros and cons: Rank-aware temporal attention for skill determination in long videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Andreas Dumanoglou, Rigas Kouskouridas, Sotiris Malassiotis, and Tae-Kyun Kim. Recovering 6d object pose and predicting next-best-view in the crowd. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Matthijs Douze, Arthur Szlam, Bharath Hariharan, and Hervé Jégou. Low-shot learning with large-scale diffusion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Oren Dovrat, Itai Lang, and Shai Avidan. Learning to sample. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kuo Du, Xiangbo Lin, Yi Sun, and Xiaohong Ma. Crossinfonet: Multi-task information sharing based hand pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yang Du, Chunfeng Yuan, Bing Li, Weiming Hu, and Stephen Maybank. Spatio-temporal self-organizing map deep network for dynamic object detection from videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yueqi Duan, Jiwen Lu, Ziwei Wang, Jianjiang Feng, and Jie Zhou. Learning deep binary descriptor with multi-quantization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yueqi Duan, Wenzhao Zheng, Xudong Lin, Jiwen Lu, and Jie Zhou. Deep adversarial metric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yueqi Duan, Yu Zheng, Jiwen Lu, Jie Zhou, and Qi Tian. Structural relational reasoning of point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Abhimanyu Dubey, Laurens van der Maaten, Zeki Yalniz, Yixuan Li, and Dhruv Mahajan. Defense against adversarial images using web-scale nearest-neighbor search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chi Nhan Duong, Khoa Luu, Kha Gia Quach, Nghia Nguyen, Eric Patterson, Tien D. Bui, and Ngan Le. Automatic face aging in videos via deep reinforcement learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Thibaut Durand, Nicolas Thome, and Matthieu Cord. Weldon: Weakly supervised learning of deep convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Thibaut Durand, Taylor Mordan, Nicolas Thome, and Matthieu Cord. Wildcat: Weakly supervised learning of deep convnets for image classification, pointwise localization and segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Thibaut Durand, Nazanin Mehrasa, and Greg Mori. Learning a deep convnet for multi-label classification with partial labels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mihai Dusmanu, Ignacio Rocco, Tomas Pajdla, Marc Pollefeys, Josef Sivic, Akihiko Torii, and Torsten Sattler. D2-net: A trainable cnn for joint description and detection of local features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Suyog Dutt Jain and Kristen Grauman. Active image segmentation propagation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Suyog Dutt Jain, Bo Xiong, and Kristen Grauman. Fusionseg: Learning to combine motion and appearance for fully automatic segmentation of generic objects in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anjan Dutta and Zeynep Akata. Semantically tied paired cycle consistency for zero-shot sketch-based image retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Debidatta Dwibedi, Yusuf Aytar, Jonathan Tompson, Pierre Sermanet, and Andrew Zisserman. Temporal cycle-consistency learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kshitij Dwivedi and Gemma Roig. Representation similarity analysis for efficient task taxonomy transfer learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Benjamin Eckart, Kihwan Kim, Alejandro Troccoli, Alonzo Kelly, and Jan Kautz. Accelerated generative models for 3d point cloud data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hamid Eghbal-zadeh, Werner Zellinger, and Gerhard Widmer. Mixture density generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sepehr Eghbali and Ladan Tahvildari. Deep spherical quantization for image search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Thibaud Ehret and Pablo Arias. On the convergence of patchmatch and its variants. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Thibaud Ehret, Axel Davy, Jean-Michel Morel, Gabriele Facciolo, and Pablo Arias. Model-blind video denoising via frame-to-frame training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- M. Ehsan Abbasnejad, Anthony Dick, and Anton van den Hengel. Infinite variational autoencoder for semi-supervised learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Kiana Ehsani, Hessam Bagherinezhad, Joseph Redmon, Roozbeh Mottaghi, and Ali Farhadi. Who let the dogs out? modeling dog behavior from visual data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Gabriel Eilertsen, Rafal K. Mantiuk, and Jonas Unger. Single-frame regularization for temporally stable cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aviv Eisenschat and Lior Wolf. Linking image and text with 2-way nets. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gil Elbaz, Tamar Avraham, and Anath Fischer. 3d point cloud registration for localization using a deep neural network auto-encoder. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shireen Elhabian and Ross Whitaker. Shapeodds: Variational bayesian learning of generative shape models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ehsan Elhamifar and M. Clara De Paolis Kaluza. Online summarization via submodular and convex optimization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mohamed Elhoseiny, Yizhe Zhu, Han Zhang, and Ahmed Elgammal. Link the head to the "beak": Zero shot learning from noisy text description at part precision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Martin Engilberge, Louis Chevallier, Patrick Pérez, and Matthieu Cord. Finding beans in burgers: Deep semantic-visual embedding with localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Martin Engilberge, Louis Chevallier, Patrick Perez, and Matthieu Cord. Sodeep: A sorting deep net to learn ranking loss surrogates. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ertunc Erdil, Sinan Yildirim, Mujdat Cetin, and Tolga Tasdizen. Mcmc shape sampling for image segmentation with nonparametric shape priors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Anders Eriksson, John Bastian, Tat-Jun Chin, and Mats Isaksson. A consensus-based framework for distributed bundle adjustment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Anders Eriksson, Carl Olsson, Fredrik Kahl, and Tat-Jun Chin. Rotation averaging and strong duality. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Seyed A. Esmaeili, Bharat Singh, and Larry S. Davis. Fast-at: Fast automatic thumbnail generation using deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Patrick Esser, Ekaterina Sutter, and Björn Ommer. A variational u-net for conditional appearance and shape generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kevin Eykholt, Ivan Evtimov, Earlene Fernandes, Bo Li, Amir Rahmati, Chaowei Xiao, Atul Prakash, Tadayoshi Kohno, and Dawn Song. Robust physical-world attacks on deep learning visual classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- C. Fabian Benitez-Quiroz, Ramprakash Srinivasan, and Aleix M. Martinez. Emotionet: An accurate, real-time algorithm for the automatic annotation of a million facial expressions in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Jose M. Facil, Benjamin Ummenhofer, Huizhong Zhou, Luis Montesano, Thomas Brox, and Javier Civera. Cam-convs: Camera-aware multi-scale convolutions for single-view depth. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jiri Fajtl, Vasileios Argyriou, Dorothy Monekosso, and Paolo Remagnino. Amnet: Memorability estimation with attention. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Chenyou Fan, Xiaofan Zhang, Shu Zhang, Wensheng Wang, Chi Zhang, and Heng Huang. Heterogeneous memory enhanced multimodal attention model for video question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Haoqi Fan and Jiatong Zhou. Stacked latent attention for multimodal reasoning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Haoqiang Fan, Hao Su, and Leonidas J. Guibas. A point set generation network for 3d object reconstruction from a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shaojing Fan, Tian-Tsong Ng, Bryan L. Koenig, Ming Jiang, and Qi Zhao. A paradigm for building generalized models of human image perception through data fusion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hao-Shu Fang, Guansong Lu, Xiaolin Fang, Jianwen Xie, Yu-Wing Tai, and Cewu Lu. Weakly and semi supervised human body part parsing via pose-guided knowledge transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kuan Fang, Alexander Toshev, Li Fei-Fei, and Silvio Savarese. Scene memory transformer for embodied agents in long-horizon tasks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Julian Faraone, Nicholas Fraser, Michaela Blott, and Philip H.W. Leong. Syq: Learning symmetric quantization for efficient deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yazan Abu Farha and Jurgen Gall. Ms-tcn: Multi-stage temporal convolutional network for action segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Alhussein Fawzi, Seyed-Mohsen Moosavi-Dezfooli, Pascal Frossard, and Stefano Soatto. Empirical study of the topology and geometry of deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christoph Feichtenhofer, Axel Pinz, and Andrew Zisserman. Convolutional two-stream network fusion for video action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Christoph Feichtenhofer, Axel Pinz, and Richard P. Wildes. Temporal residual networks for dynamic scene recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Christoph Feichtenhofer, Axel Pinz, Richard P. Wildes, and Andrew Zisserman. What have we learned from deep representations for action recognition? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jie Feng, Brian Price, Scott Cohen, and Shih-Fu Chang. Interactive segmentation on rgbd images via cue selection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yang Feng, Lin Ma, Wei Liu, and Jiebo Luo. Spatio-temporal video re-localization by warp lstm. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Yifan Feng, Zizhao Zhang, Xibin Zhao, Rongrong Ji, and Yue Gao. Gvcnn: Group-view convolutional neural networks for 3d shape recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zhen-Hua Feng, Josef Kittler, William Christmas, Patrik Huber, and Xiao-Jun Wu. Dynamic attention-controlled cascaded shape regression exploiting training data augmentation and fuzzy-set sample weighting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Basura Fernando, Peter Anderson, Marcus Hutter, and Stephen Gould. Discriminative hierarchical rank pooling for activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Basura Fernando, Hakan Bilen, Efstratios Gavves, and Stephen Gould. Self-supervised video representation learning with odd-one-out networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Matthias Fey, Jan Eric Lenssen, Frank Weichert, and Heinrich Müller. Splinecnn: Fast geometric deep learning with continuous b-spline kernels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Michael Figurnov, Maxwell D. Collins, Yukun Zhu, Li Zhang, Jonathan Huang, Dmitry Vetrov, and Ruslan Salakhutdinov. Spatially adaptive computation time for residual networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Michael Firman, Oisin Mac Aodha, Simon Julier, and Gabriel J. Brostow. Structured prediction of unobserved voxels from a single depth image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Michael Firman, Neill D. F. Campbell, Lourdes Agapito, and Gabriel J. Brostow. Diversenet: When one right answer is not enough. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- John Flynn, Ivan Neulander, James Philbin, and Noah Snavely. Deepstereo: Learning to predict new views from the world’s imagery. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- John Flynn, Michael Broxton, Paul Debevec, Matthew DuVall, Graham Fyffe, Ryan Overbeck, Noah Snavely, and Richard Tucker. Deepview: View synthesis with learned gradient descent. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ruth Fong and Andrea Vedaldi. Net2vec: Quantifying and explaining how concepts are encoded by filters in deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- David F. Fouhey, Abhinav Gupta, and Andrew Zisserman. 3d shape attributes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- David F. Fouhey, Wei-cheng Kuo, Alexei A. Efros, and Jitendra Malik. From lifestyle vlogs to everyday interactions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Johan Fredriksson, Viktor Larsson, Carl Olsson, and Fredrik Kahl. Optimal relative pose with unknown correspondences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Oriel Frigo, Neus Sabater, Julie Delon, and Pierre Hellier. Split and match: Example-based adaptive patch sampling for unsupervised style transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Huan Fu, Chaohui Wang, Dacheng Tao, and Michael J. Black. Occlusion boundary detection via deep exploration of context. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Huan Fu, Mingming Gong, Chaohui Wang, Kayhan Batmanghelich, and Dacheng Tao. Deep ordinal regression network for monocular depth estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Huan Fu, Mingming Gong, Chaohui Wang, Kayhan Batmanghelich, Kun Zhang, and Dacheng Tao. Geometry-consistent generative adversarial networks for one-sided unsupervised domain mapping. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xueyang Fu, Jiabin Huang, Delu Zeng, Yue Huang, Xinghao Ding, and John Paisley. Removing rain from single images via a deep detail network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yuki Fujimura, Masaaki Iiyama, Atsushi Hashimoto, and Michihiko Minoh. Photometric stereo in participating media considering shape-dependent forward scatter. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hiroshi Fukui, Tsubasa Hirakawa, Takayoshi Yamashita, and Hironobu Fujiyoshi. Attention branch network: Learning of attention mechanism for visual explanation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chris Funk and Yanxi Liu. Symmetry recaptcha. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- David Gadot and Lior Wolf. Patchbatch: A batch augmented loss for optical flow. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Adrien Gaidon, Qiao Wang, Yohann Cabon, and Eleonora Vig. Virtual worlds as proxy for multi-object tracking analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Adrian Galdran, Aitor Alvarez-Gila, Alessandro Bria, Javier Vazquez-Corral, and Marcelo Bertalmío. On the duality between retinex and image dehazing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Guillermo Gallego, Henri Rebecq, and Davide Scaramuzza. A unifying contrast maximization framework for event cameras, with applications to motion, depth, and optical flow estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Guillermo Gallego, Mathias Gehrig, and Davide Scaramuzza. Focus is all you need: Loss functions for event-based vision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Silvano Galliani and Konrad Schindler. Just look at the image: Viewpoint-specific surface normal prediction for improved multi-view reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chuang Gan, Tianbao Yang, and Boqing Gong. Learning attributes equals multi-source domain generalization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chuang Gan, Zhe Gan, Xiaodong He, Jianfeng Gao, and Li Deng. Stylenet: Generating attractive visual captions with styles. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Chuang Gan, Boqing Gong, Kun Liu, Hao Su, and Leonidas J. Guibas. Geometry guided convolutional neural networks for self-supervised video representation learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yosef Gandelsman, Assaf Shocher, and Michal Irani. "double-dip": Unsupervised image decomposition via coupled deep-image-priors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Siddha Ganju, Olga Russakovsky, and Abhinav Gupta. What's in a question: Using visual questions as a form of supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ruohan Gao and Kristen Grauman. 2.5d visual sound. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ruohan Gao, Bo Xiong, and Kristen Grauman. Im2flow: Motion hallucination from static images for action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yang Gao, Oscar Beijbom, Ning Zhang, and Trevor Darrell. Compact bilinear pooling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zhanning Gao, Gang Hua, Dongqing Zhang, Nebojsa Jojic, Le Wang, Jianru Xue, and Nanning Zheng. Er3: A unified framework for event retrieval, recognition and recounting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guillermo Garcia-Hernando and Tae-Kyun Kim. Transition forests: Learning discriminative temporal transitions for action recognition and detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guillermo Garcia-Hernando, Shanxin Yuan, Seungryul Baek, and Tae-Kyun Kim. First-person hand action benchmark with rgb-d videos and 3d hand pose annotations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mathieu Garon, Kalyan Sunkavalli, Sunil Hadap, Nathan Carr, and Jean-Francois Lalonde. Fast spatially-varying indoor lighting estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jochen Gast and Stefan Roth. Lightweight probabilistic deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jochen Gast, Anita Sellent, and Stefan Roth. Parametric object motion from blur. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Vijetha Gattupalli, Yaoxin Zhuo, and Baoxin Li. Weakly supervised deep image hashing through tag embeddings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Leon A. Gatys, Alexander S. Ecker, and Matthias Bethge. Image style transfer using convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Leon A. Gatys, Alexander S. Ecker, Matthias Bethge, Aaron Hertzmann, and Eli Shechtman. Controlling perceptual factors in neural style transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kirill Gavrilyuk, Amir Ghodrati, Zhenyang Li, and Cees G. M. Snoek. Actor and action video segmentation from a sentence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Liuhao Ge, Hui Liang, Junsong Yuan, and Daniel Thalmann. Robust 3d hand pose estimation in single depth images: From single-view cnn to multi-view cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Weifeng Ge and Yizhou Yu. Borrowing treasures from the wealthy: Deep transfer learning through selective joint fine-tuning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Weifeng Ge, Sibe Yang, and Yizhou Yu. Multi-evidence filtering and fusion for multi-label classification, object detection and semantic segmentation based on weakly supervised learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Weifeng Ge, Xiangru Lin, and Yizhou Yu. Weakly supervised complementary parts models for fine-grained image classification from the bottom up. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Baris Gecer, Stylianos Ploumpis, Irene Kotsia, and Stefanos Zafeiriou. Ganfit: Generative adversarial network fitting for high fidelity 3d face reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Patrick Geneva, James Maley, and Guoquan Huang. An efficient schmidt-ekf for 3d visual-inertial slam. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhenglin Geng, Chen Cao, and Sergey Tulyakov. 3d guided fine-grained face manipulation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kyle Genova, Forrester Cole, Aaron Maschinot, Aaron Sarna, Daniel Vlasic, and William T. Freeman. Unsupervised training for 3d morphable model regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Georgios Georgakis, Srikrishna Karanam, Ziyang Wu, Jan Ernst, and Jana Košecká. End-to-end learning of keypoint detector and descriptor for pose invariant 3d matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Georgios Georgiadis. Accelerating convolutional neural networks via activation map compression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Deepti Ghadiyaram, Du Tran, and Dhruv Mahajan. Large-scale weakly-supervised pre-training for video action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kamran Ghasedi, Xiaoqian Wang, Cheng Deng, and Heng Huang. Balanced self-paced learning for generative adversarial clustering network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kamran Ghasedi Dizaji, Feng Zheng, Najmeh Sadoughi, Yanhua Yang, Cheng Deng, and Heng Huang. Unsupervised deep generative adversarial hashing network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Golnaz Ghiasi, Tsung-Yi Lin, and Quoc V. Le. Nas-fpn: Learning scalable feature pyramid architecture for object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Behnam Gholami and Vladimir Pavlovic. Probabilistic temporal subspace clustering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Arnab Ghosh, Viveka Kulharia, Vinay P. Namboodiri, Philip H.S. Torr, and Puneet K. Dokania. Multi-agent diverse generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Soumyadeep Ghosh, Richa Singh, and Mayank Vatsa. On learning density aware embeddings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Silvio Giancola, Jesus Zarzar, and Bernard Ghanem. Leveraging shape completion for 3d siamese tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Spyros Gidaris and Nikos Komodakis. Locnet: Improving localization accuracy for object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Spyros Gidaris and Nikos Komodakis. Detect, replace, refine: Deep structured prediction for pixel wise labeling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Spyros Gidaris and Nikos Komodakis. Dynamic few-shot visual learning without forgetting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Spyros Gidaris and Nikos Komodakis. Generating classification weights with gnn denoising autoencoders for few-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Andrew Gilbert, John Collomosse, Hailin Jin, and Brian Price. Disentangling structure and aesthetics for style-aware image completion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Shiry Ginosar, Amir Bar, Gefen Kohavi, Caroline Chan, Andrew Owens, and Jitendra Malik. Learning individual styles of conversational gesture. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rohit Girdhar, Deva Ramanan, Abhinav Gupta, Josef Sivic, and Bryan Russell. Actionvlad: Learning spatio-temporal aggregation for action classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Rohit Girdhar, Georgia Gkioxari, Lorenzo Torresani, Manohar Paluri, and Du Tran. Detect-and-track: Efficient pose estimation in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rohit Girdhar, Joao Carreira, Carl Doersch, and Andrew Zisserman. Video action transformer network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Georgia Gkioxari, Ross Girshick, Piotr Dollár, and Kaiming He. Detecting and recognizing human-object interactions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Clement Godard, Oisin Mac Aodha, and Gabriel J. Brostow. Unsupervised monocular depth estimation with left-right consistency. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Arushi Goel, Keng Teck Ma, and Cheston Tan. An end-to-end network for generating social relationship graphs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zan Gojcic, Caifa Zhou, Jan D. Wegner, and Andreas Wieser. The perfect match: 3d point cloud matching with smoothed densities. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Eran Goldman, Roei Herzig, Aviv Eisenschat, Jacob Goldberger, and Tal Hassner. Precise detection in densely packed scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Vladislav Golyanik, Sk Aziz Ali, and Didier Stricker. Gravitational approach for point set registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Lluís Gomez, Yash Patel, Marçal Rusinol, Dimosthenis Karatzas, and C. V. Jawahar. Self-supervised learning of visual features through embedding images into text topic spaces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alexander Gomez-Villa, Adrian Martin, Javier Vazquez-Corral, and Marcelo Bertalmio. Convolutional neural networks can be deceived by visual illusions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dong Gong, Minghui Tan, Yanning Zhang, Anton van den Hengel, and Qinfeng Shi. Blind image deconvolution by automatic gradient activation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ke Gong, Xiaodan Liang, Dongyu Zhang, Xiaohui Shen, and Liang Lin. Look into person: Self-supervised structure-sensitive learning and a new benchmark for human parsing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Rui Gong, Wen Li, Yuhua Chen, and Luc Van Gool. Dlow: Domain flow for adaptation and generalization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yunye Gong, Srikrishna Karanam, Ziyang Wu, Kuan-Chuan Peng, Jan Ernst, and Peter C. Doerschuk. Learning compositional visual concepts with mutual consistency. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Abel Gonzalez-Garcia, Davide Modolo, and Vittorio Ferrari. Objects as context for detecting their semantic parts. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Anand Gopalakrishnan, Ankur Mali, Dan Kifer, Lee Giles, and Alexander G. Ororbia. A neural temporal model for human motion prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Albert Gordo and Diane Larlus. Beyond instance-level image retrieval: Leveraging captions to learn a global visual representation for semantic retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ariel Gordon, Elad Eban, Ofir Nachum, Bo Chen, Hao Wu, Tien-Ju Yang, and Edward Choi. Morphnet: Fast simple resource-constrained structure learning of deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lena Gorelick, Yuri Boykov, and Olga Veksler. Adaptive and move making auxiliary cuts for binary pairwise energies. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Siavash Gorji and James J. Clark. Attentional push: A deep convolutional network for augmenting image saliency with shared attention modeling in social scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Siavash Gorji and James J. Clark. Going from image to video saliency: Augmenting image saliency with dynamic attentional push. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mengran Gou, Fei Xiong, Octavia Camps, and Mario Sznaier. Monet: Moments embedding network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yash Goyal, Tejas Khot, Douglas Summers-Stay, Dhruv Batra, and Devi Parikh. Making the v in vqa matter: Elevating the role of image understanding in visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alexander Grabner, Peter M. Roth, and Vincent Lepetit. 3d pose estimation and 3d model retrieval for objects in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Benjamin Graham, Martin Engelcke, and Laurens van der Maaten. 3d semantic segmentation with submanifold sparse convolutional networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Brent A. Griffin and Jason J. Corso. Bubblenets: Learning to select the guidance frame in video object segmentation by deep sorting frames. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Artur Grigorev, Artem Sevastopolsky, Alexander Vakhitov, and Victor Lempitsky. Coordinate-based texture inpainting for pose-guided human image generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sam Gross, Marc’Aurelio Ranzato, and Arthur Szlam. Hard mixtures of experts for large scale weakly supervised vision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Thibault Groueix, Matthew Fisher, Vladimir G. Kim, Bryan C. Russell, and Mathieu Aubry. A papier-mâché approach to learning 3d surface generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Chunhui Gu, Chen Sun, David A. Ross, Carl Vondrick, Caroline Pantofaru, Yeqing Li, Sudheendra Vijayanarasimhan, George Toderici, Susanna Ricco, Rahul Sukthankar, Cordelia Schmid, and Jitendra Malik. Ava: A video dataset of spatio-temporally localized atomic visual actions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jinjin Gu, Hannan Lu, Wangmeng Zuo, and Chao Dong. Blind super-resolution with iterative kernel correction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jinwei Gu, Xiaodong Yang, Shalini De Mello, and Jan Kautz. Dynamic facial analysis: From bayesian filtering to recurrent neural network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hao Guan and William A. P. Smith. Brisks: Binary features for spherical images on a geodesic grid. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Riza Alp Guler and Iasonas Kokkinos. Holopose: Holistic 3d human reconstruction in-the-wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hao Guo, Kang Zheng, Xiaochuan Fan, Hongkai Yu, and Song Wang. Visual attention consistency under image transforms for multi-label image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jun Guo and Hongyang Chao. One-to-many network for visually pleasing compression artifacts reduction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yiluan Guo and Ngai-Man Cheung. Efficient and deep person re-identification using multi-level similarity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Agrim Gupta, Justin Johnson, Li Fei-Fei, Silvio Savarese, and Alexandre Alahi. Social gan: Socially acceptable trajectories with generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Agrim Gupta, Piotr Dollar, and Ross Girshick. Lvis: A dataset for large vocabulary instance segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ankush Gupta, Andrea Vedaldi, and Andrew Zisserman. Synthetic data for text localisation in natural images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Saurabh Gupta, James Davidson, Sergey Levine, Rahul Sukthankar, and Jitendra Malik. Cognitive mapping and planning for visual navigation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shir Gur and Lior Wolf. Single image depth estimation trained via depth from defocus cues. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Danna Gurari, Suyog Jain, Margrit Betke, and Kristen Grauman. Pull the plug? predicting if computers or humans should segment images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Danna Gurari, Qing Li, Abigale J. Stangl, Anhong Guo, Chi Lin, Kristen Grauman, Jiebo Luo, and Jeffrey P. Bigham. Vizwiz grand challenge: Answering visual questions from blind people. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Danna Gurari, Qing Li, Chi Lin, Yinan Zhao, Anhong Guo, Abigale Stangl, and Jeffrey P. Bigham. Vizwiz-priv: A dataset for recognizing the presence and purpose of private visual information in images taken by blind people. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Swaminathan Gurumurthy, Ravi Kiran Sarvadevabhatla, and R. Venkatesh Babu. Deligan : Generative adversarial networks for diverse and limited data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Felipe Gutierrez-Barragan, Syed Azer Reza, Andreas Velten, and Mohit Gupta. Practical coding function design for time-of-flight imaging. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Michael Gygli and Vittorio Ferrari. Fast object class labelling via speech. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Michael Gygli, Yale Song, and Liangliang Cao. Video2gif: Automatic generation of animated gifs from video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hyowon Ha, Sunghoon Im, Jaesik Park, Hae-Gon Jeon, and In So Kweon. High-quality depth from uncalibrated small motion clip. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ikhsanul Habibie, Weipeng Xu, Dushyant Mehta, Gerard Pons-Moll, and Christian Theobalt. In the wild human pose estimation using explicit 2d features and intermediate 3d representations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Timo Hackel, Jan D. Wegner, and Konrad Schindler. Contour detection in unstructured 3d point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Naama Hadad, Lior Wolf, and Moni Shohar. A two-step disentanglement method. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Benjamin D. Haeffele and Rene Vidal. Global optimality in neural network training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Bjoern Haefner, Yvain Quéau, Thomas Möllenhoff, and Daniel Cremers. Fight ill-posedness with ill-posedness: Single-shot variational depth super-resolution from shading. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Daniel Haehn, Verena Kaynig, James Tompkin, Jeff W. Lichtman, and Hanspeter Pfister. Guided proofreading of automatic segmentations for connectomics. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Philip Haeusser, Alexander Mordvintsev, and Daniel Cremers. Learning by association – a versatile semi-supervised training method for neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Maciej Halber and Thomas Funkhouser. Fine-to-coarse global registration of rgb-d scans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Oshri Halimi, Or Litany, Emanuele Rodola, Alex M. Bronstein, and Ron Kimmel. Unsupervised learning of dense shape correspondence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bumsub Ham, Minsu Cho, Cordelia Schmid, and Jean Ponce. Proposal flow. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ryuhei Hamaguchi, Ken Sakurada, and Ryosuke Nakamura. Rare event detection using disentangled representation learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Seyed Hamid Rezatofighi, Anton Milan, Zhen Zhang, Qinfeng Shi, Anthony Dick, and Ian Reid. Joint probabilistic matching using m-best solutions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Bohyung Han, Jack Sim, and Hartwig Adam. Branchout: Regularization for online ensemble tracking with convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kai Han, Kwan-Yee K. Wong, Dirk Schnieders, and Miaomiao Liu. Mirror surface reconstruction under an uncalibrated camera. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Wei Han, Shiyu Chang, Ding Liu, Mo Yu, Michael Witbrock, and Thomas S. Huang. Image super-resolution via dual-state recurrent networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Xiaoguang Han, Zhaoxuan Zhang, Dong Du, Mingdai Yang, Jingming Yu, Pan Pan, Xin Yang, Ligang Liu, Zixiang Xiong, and Shuguang Cui. Deep reinforcement learning of volume-guided progressive view inpainting for 3d point scene completion from a single depth image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ankur Handa, Viorica Patraucean, Vijay Badrinarayanan, Simon Stent, and Roberto Cipolla. Understanding real world indoor scenes with synthetic data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zekun Hao, Yu Liu, Hongwei Qin, Junjie Yan, Xiu Li, and Xiaolin Hu. Scale-aware face detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zekun Hao, Xun Huang, and Serge Belongie. Controllable video generation with sparse trajectories. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Nazim Haouchine and Stephane Cotin. Template-based monocular 3d recovery of elastic shapes using lagrangian multipliers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Albert Haque, Alexandre Alahi, and Li Fei-Fei. Recurrent attention models for depth-based person identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kensho Hara, Hirokatsu Kataoka, and Yutaka Satoh. Can spatiotemporal 3d cnns retrace the history of 2d cnns and imagenet? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ali Harakeh, Daniel Asmar, and Elie Shammas. Identifying good training data for self-supervised free space estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mehrtash Harandi, Mathieu Salzmann, and Fatih Porikli. When vlad met hilbert. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Muhammad Haris, Gregory Shakhnarovich, and Norimichi Ukita. Deep back-projection networks for super-resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Muhammad Haris, Gregory Shakhnarovich, and Norimichi Ukita. Recurrent back-projection network for video super-resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ben Harwood and Tom Drummond. Fanng: Fast approximate nearest neighbour graphs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Irtiza Hasan, Francesco Setti, Theodore Tsesmellis, Alessio Del Bue, Fabio Galasso, and Marco Cristani. Mx-lstm: Mixing tracklets and vislets to jointly forecast trajectories and head poses. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Mahmudul Hasan, Jonghyun Choi, Jan Neumann, Amit K. Roy-Chowdhury, and Larry S. Davis. Learning temporal regularity in video sequences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tristan Hascoet, Yasuo Ariki, and Tetsuya Takiguchi. On zero-shot recognition of generic objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yana Hasson, Gul Varol, Dimitrios Tzionas, Igor Kalevatykh, Michael J. Black, Ivan Laptev, and Cordelia Schmid. Learning joint reconstruction of hands and manipulated objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Monica Haurilet, Alina Roitberg, and Rainer Stiefelhagen. It’s not about the journey; it’s about the destination: Following soft paths under question-guidance for visual reasoning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Manuel Haussmann, Fred A. Hamprecht, and Melih Kandemir. Variational bayesian multiple instance learning with gaussian processes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Munawar Hayat, Salman H. Khan, Naoufel Werghi, and Roland Goecke. Joint registration and representation learning for unconstrained face identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zeeshan Hayder, Xuming He, and Mathieu Salzmann. Learning to co-generate object proposals with a deep structured network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zeeshan Hayder, Xuming He, and Mathieu Salzmann. Boundary-aware instance segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kaiming He, Xiangyu Zhang, Shaoqing Ren, and Jian Sun. Deep residual learning for image recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kun He, Yan Lu, and Stan Sclaroff. Local descriptors optimized for average precision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lifang He, Chun-Ta Lu, Hao Ding, Shen Wang, Linlin Shen, Philip S. Yu, and Ann B. Ragin. Multi-way multi-level kernel modeling for neuroimaging classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tong He, Zhi Zhang, Hang Zhang, Zhongyue Zhang, Junyuan Xie, and Mu Li. Bag of tricks for image classification with convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Stefan Heber and Thomas Pock. Convolutional networks for shape from light field. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Eric Heim. Constrained generative adversarial networks for interactive image generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Matthias Hein, Maksym Andriushchenko, and Julian Bitterwolf. Why relu networks yield high-confidence predictions far away from the training data and how to mitigate the problem. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- João F. Henriques and Andrea Vedaldi. Mapnet: An allocentric spatial memory for mapping environments. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jae-Pil Heo, Zhe Lin, Xiaohui Shen, Jonathan Brandt, and Sung-eui Yoon. Shortlist selection with residual-aware distance estimator for k-nearest neighbor search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Samitha Herath, Mehrtash Harandi, and Fatih Porikli. Learning an invariant hilbert space for domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Samitha Herath, Mehrtash Harandi, Basura Fernando, and Richard Nock. Min-max statistical alignment for transfer learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Luis Herranz, Shuqiang Jiang, and Xiangyang Li. Scene recognition with cnns: Objects, scales and dataset bias. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Amir Hertz, Sharon Fogel, Rana Hanocka, Raja Giryes, and Daniel Cohen-Or. Blind visual motif removal from a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chih-Hui Ho, Brandon Leung, Erik Sandstrom, Yen Chang, and Nuno Vasconcelos. Catastrophic child’s play: Easy to perform, hard to defend adversarial attacks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Judy Hoffman, Saurabh Gupta, and Trevor Darrell. Learning with side information through modality hallucination. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yannick Hold-Geoffroy, Kalyan Sunkavalli, Sunil Hadap, Emiliano Gambaretto, and Jean-Francois Lalonde. Deep outdoor illumination estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yannick Hold-Geoffroy, Kalyan Sunkavalli, Jonathan Eisenmann, Matthew Fisher, Emiliano Gambaretto, Sunil Hadap, and Jean-François Lalonde. A perceptual measure for deep single image camera calibration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yannick Hold-Geoffroy, Akshaya Athawale, and Jean-Francois Lalonde. Deep sky modeling for single image outdoor lighting estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Namdar Homayounfar, Sanja Fidler, and Raquel Urtasun. Sports field localization via deep structured models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Namdar Homayounfar, Wei-Chiu Ma, Shrinidhi Kowshika Lakshmikanth, and Raquel Urtasun. Hierarchical recurrent attention networks for structured online maps. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sina Honari, Jason Yosinski, Pascal Vincent, and Christopher Pal. Recombinator networks: Learning coarse-to-fine feature aggregation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Sina Honari, Pavlo Molchanov, Stephen Tyree, Pascal Vincent, Christopher Pal, and Jan Kautz. Improving landmark localization with semi-supervised learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Joey Hong, Benjamin Sapp, and James Philbin. Rules of the road: Predicting driving behavior with a convolutional model of semantic interactions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Seunghoon Hong, Junhyuk Oh, Honglak Lee, and Bohyung Han. Learning transferrable knowledge for semantic segmentation with deep convolutional neural network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Weixiang Hong, Zhenzhen Wang, Ming Yang, and Junsong Yuan. Conditional generative adversarial network for structured domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ju Hong Yoon, Chang-Ryeol Lee, Ming-Hsuan Yang, and Kuk-Jin Yoon. Online multi-object tracking via structural constraint event aggregation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Jan Hosang, Rodrigo Benenson, and Bernt Schiele. Learning non-maximum suppression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yedid Hoshen and Shmuel Peleg. An egocentric look at video photographer identity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yedid Hoshen and Lior Wolf. Unsupervised correlation analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yedid Hoshen, Ke Li, and Jitendra Malik. Non-adversarial image synthesis with generative latent nearest neighbors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mahdi S. Hosseini, Lyndon Chan, Gabriel Tse, Michael Tang, Jun Deng, Sajad Norouzi, Corwyn Rowsell, Konstantinos N. Plataniotis, and Savvas Damaskinos. Atlas of digital pathology: A generalized hierarchical histological tissue type-annotated database for deep learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Vlad Hosu, Bastian Goldlucke, and Dietmar Saupe. Effective aesthetics prediction with multi-level spatially pooled features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Le Hou, Dimitris Samaras, Tahsin M. Kurc, Yi Gao, James E. Davis, and Joel H. Saltz. Patch-based convolutional neural network for whole slide tissue image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Qibin Hou, Ming-Ming Cheng, Xiaowei Hu, Ali Borji, Zhuowen Tu, and Philip H. S. Torr. Deeply supervised salient object detection with short connections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Saihui Hou, Xinyu Pan, Chen Change Loy, Zilei Wang, and Dahua Lin. Learning a unified classifier incrementally via rebalancing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wei-Lin Hsiao and Kristen Grauman. Creating capsule wardrobes from fashion images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kuang-Jui Hsu, Yen-Yu Lin, and Yung-Yu Chuang. Deepco3: Deep instance co-segmentation by co-peak search and co-saliency detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ping Hu, Gang Wang, Xiangfei Kong, Jason Kuen, and Yap-Peng Tan. Motion-guided cascaded refinement network for video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Xuecai Hu, Haoyuan Mu, Xiangyu Zhang, Zilei Wang, Tieniu Tan, and Jian Sun. Meta-sr: A magnification-arbitrary network for super-resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yinlin Hu, Yunsong Li, and Rui Song. Robust interpolation of correspondences for large displacement optical flow. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yuan-Ting Hu and Yen-Yu Lin. Progressive feature matching with alternate descriptor selection and correspondence enrichment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Binh-Son Hua, Minh-Khoi Tran, and Sai-Kit Yeung. Pointwise convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Haozhi Huang, Hao Wang, Wenhan Luo, Lin Ma, Wenhao Jiang, Xiaolong Zhu, Zhifeng Li, and Wei Liu. Real-time neural style transfer for videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- He Huang, Changhu Wang, Philip S. Yu, and Chang-Dong Wang. Generative dual adversarial network for generalized zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kun Huang, Yifan Wang, Zihan Zhou, Tianjiao Ding, Shenghua Gao, and Yi Ma. Learning to parse wireframes in images of man-made environments. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Shaoli Huang, Zhe Xu, Dacheng Tao, and Ya Zhang. Part-stacked cnn for fine-grained visual categorization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Inbar Huberman and Raanan Fattal. Detecting repeating objects using patch correlation analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Drew A. Hudson and Christopher D. Manning. Gqa: A new dataset for real-world visual reasoning and compositional question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Minyoung Huh, Shao-Hua Sun, and Ning Zhang. Feedback adversarial learning: Spatial feedback for improving generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zheng Hui, Xiumei Wang, and Xinbo Gao. Fast and accurate single image super-resolution via information distillation network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zhuo Hui, Ayan Chakrabarti, Kalyan Sunkavalli, and Aswin C. Sankaranarayanan. Learning to separate multiple illuminants in a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wei-Chih Hung, Varun Jampani, Sifei Liu, Pavlo Molchanov, Ming-Hsuan Yang, and Jan Kautz. Scops: Self-supervised co-part segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Junhwa Hur and Stefan Roth. Iterative residual refinement for joint optical flow and occlusion estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zaem Hussain, Mingda Zhang, Xiaozhong Zhang, Keren Ye, Christopher Thomas, Zuha Agha, Nathan Ong, and Adriana Kovashka. Automatic understanding of image and video advertisements. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Noureddien Hussein, Efstratios Gavves, and Arnold W.M. Smeulders. Unified embedding and metric learning for zero-exemplar event detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Noureddien Hussein, Efstratios Gavves, and Arnold W.M. Smeulders. Timeception for complex action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Loc Huynh, Weikai Chen, Shunsuke Saito, Jun Xing, Koki Nagano, Andrew Jones, Paul Debevec, and Hao Li. Mesoscopic facial geometry inference using deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jyh-Jing Hwang, Tsung-Wei Ke, Jianbo Shi, and Stella X. Yu. Adversarial structure matching for structured prediction tasks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Je Hyeong Hong, Christopher Zach, and Andrew Fitzgibbon. Revisiting the variable projection method for separable nonlinear least squares problems. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Forrest N. Iandola, Matthew W. Moskewicz, Khalid Ashraf, and Kurt Keutzer. Firecaffe: Near-linear acceleration of deep neural network training on compute clusters. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mostafa S. Ibrahim, Srikanth Muralidharan, Zhiwei Deng, Arash Vahdat, and Greg Mori. A hierarchical deep temporal model for group activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Daiki Ikami, Toshihiko Yamasaki, and Kiyoharu Aizawa. Residual expansion algorithm: Fast and effective optimization for nonconvex least squares problems. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Daiki Ikami, Toshihiko Yamasaki, and Kiyoharu Aizawa. Local and global optimization techniques in graph-based clustering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Eddy Ilg, Nikolaus Mayer, Tonmoy Saikia, Margret Keuper, Alexey Dosovitskiy, and Thomas Brox. FlowNet 2.0: Evolution of optical flow estimation with deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Sunghoon Im, Hae-Gon Jeon, and In So Kweon. Robust depth estimation from auto bracketed images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Saif Imran, Yunfei Long, Xiaoming Liu, and Daniel Morris. Depth coefficients for depth completion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Atul Ingle, Andreas Velten, and Mohit Gupta. High flux passive imaging with single-photon sensors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nathan Inkawhich, Wei Wen, Hai (Helen) Li, and Yiran Chen. Feature space perturbations yield more transferable adversarial examples. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Naoto Inoue, Ryosuke Furuta, Toshihiko Yamasaki, and Kiyoharu Aizawa. Cross-domain weakly-supervised object detection through progressive domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Eldar Insafutdinov, Mykhaylo Andriluka, Leonid Pishchulin, Siyu Tang, Evgeny Levinkov, Bjoern Andres, and Bernt Schiele. Arttrack: Articulated multi-person tracking in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yani Ioannou, Duncan Robertson, Roberto Cipolla, and Antonio Criminisi. Deep roots: Improving cnn efficiency with hierarchical filter groups. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Radu Tudor Ionescu, Fahad Shahbaz Khan, Mariana-Iuliana Georgescu, and Ling Shao. Object-centric auto-encoders and dummy anomalies for abnormal event detection in video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Umar Iqbal, Anton Milan, and Juergen Gall. Posetrack: Joint multi-person pose estimation and tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hossam Isack, Olga Veksler, Milan Sonka, and Yuri Boykov. Hedgehog shape priors for multi-object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hossam Isack, Olga Veksler, Ipek Oguz, Milan Sonka, and Yuri Boykov. Efficient optimization for hierarchically-structured interacting segments (hints). In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Ahmet Iscen, Michael Rabbat, and Teddy Furon. Efficient large-scale similarity search using matrix factorization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ahmet Iscen, Giorgos Tolias, Yannis Avrithis, Teddy Furon, and Ondrej Chum. Efficient diffusion on region manifolds: Recovering small objects with compact cnn representations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ahmet Iscen, Yannis Avrithis, Giorgos Tolias, Teddy Furon, and Ondřej Chum. Fast spectral ranking for similarity search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ahmet Iscen, Giorgos Tolias, Yannis Avrithis, and Ondrej Chum. Label propagation for deep semi-supervised learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Takahiro Isokane, Fumio Okura, Ayaka Ide, Yasuyuki Matsushita, and Yasushi Yagi. Probabilistic plant modeling via multi-view image-to-image translation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Phillip Isola, Jun-Yan Zhu, Tinghui Zhou, and Alexei A. Efros. Image-to-image translation with conditional adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vamsi K. Ithapu, Risi Kondor, Sterling C. Johnson, and Vikas Singh. The incremental multiresolution matrix factorization algorithm. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Eisuke Ito and Takayuki Okatani. Self-calibration-based approach to critical motion sequences of rolling-shutter structure from motion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mohit Iyyer, Varun Manjunatha, Anupam Guha, Yogarshi Vyas, Jordan Boyd-Graber, Hal Daume, III, and Larry S. Davis. The amazing mysteries of the gutter: Drawing inferences between panels in comic book narratives. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hamid Izadinia, Qi Shan, and Steven M. Seitz. Im2cad. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Dominic Jack, Frederic Maire, Sareh Shirazi, and Anders Eriksson. Ige-net: Inverse graphics energy networks for human pose estimation and single-view reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Benoit Jacob, Skirmantas Kligys, Bo Chen, Menglong Zhu, Matthew Tang, Andrew Howard, Hartwig Adam, and Dmitry Kalenichenko. Quantization and training of neural networks for efficient integer-arithmetic-only inference. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jorn-Henrik Jacobsen, Jan van Gemert, Zhongyu Lou, and Arnold W. M. Smeulders. Structured receptive fields in cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Seong Jae Hwang, Nagesh Adluru, Maxwell D. Collins, Sathya N. Ravi, Barbara B. Bendlin, Sterling C. Johnson, and Vikas Singh. Coupled harmonic bases for longitudinal characterization of brain networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Seong Jae Hwang, Sathya N. Ravi, Zirui Tao, Hyunwoo J. Kim, Maxwell D. Collins, and Vikas Singh. Tensorize, factorize and regularize: Robust visual relationship learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Mariano Jaimez, Thomas J. Cashman, Andrew Fitzgibbon, Javier Gonzalez-Jimenez, and Daniel Cremers. An efficient background term for 3d reconstruction and tracking with smooth surface models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Himalaya Jain, Joaquin Zepeda, Patrick Pérez, and Rémi Gribonval. Learning a complete image indexing pipeline. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Unnat Jain, Luca Weihs, Eric Kolve, Mohammad Rastegari, Svetlana Lazebnik, Ali Farhadi, Alexander G. Schwing, and Aniruddha Kembhavi. Two body problem: Collaborative visual task completion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ayush Jaiswal, Yue Wu, Wael AbdAlmageed, Iacopo Masi, and Premkumar Natarajan. Aird: Adversarial learning framework for image repurposing detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Muhammad Abdullah Jamal and Guo-Jun Qi. Task agnostic meta-learning for few-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Stephen James, Paul Wohlhart, Mrinal Kalakrishnan, Dmitry Kalashnikov, Alex Irpan, Julian Ibarz, Sergey Levine, Raia Hadsell, and Konstantinos Bousmalis. Sim-to-real via sim-to-sim: Data-efficient robotic grasping via randomized-to-canonical adaptation networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Varun Jampani, Martin Kiefel, and Peter V. Gehler. Learning sparse high dimensional filters: Image filtering, dense crfs and bilateral neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Varun Jampani, Raghudeep Gadde, and Peter V. Gehler. Video propagation networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Joel Janai, Fatma Guney, Jonas Wulff, Michael J. Black, and Andreas Geiger. Slow flow: Exploiting high-speed cameras for accurate and diverse optical flow reference data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Won-Dong Jang and Chang-Su Kim. Interactive image segmentation via backpropagating refinement scheme. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Won-Dong Jang, Chulwoo Lee, and Chang-Su Kim. Primary object segmentation in videos via alternate convex optimization of foreground and background distributions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yunseok Jang, Yale Song, Youngjae Yu, Youngjin Kim, and Gunhee Kim. Tgif-qa: Toward spatio-temporal reasoning in visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Dinesh Jayaraman and Kristen Grauman. Slow and steady feature analysis: Higher order temporal coherence in video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Dinesh Jayaraman and Kristen Grauman. Learning to look around: Intelligently exploring unseen environments for unknown tasks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Simon Jenni and Paolo Favaro. Self-supervised feature learning by learning to spot artifacts. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Simon Jenni and Paolo Favaro. On stabilizing generative adversarial training with noise. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Daniel S. Jeon, Seung-Hwan Baek, Inchang Choi, and Min H. Kim. Enhancing the spatial resolution of stereo images using a parallax prior. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hae-Gon Jeon, Joon-Young Lee, Sunghoon Im, Hyowon Ha, and In So Kweon. Stereo matching with color and monochrome cameras in low-light conditions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yunho Jeon and Junmo Kim. Active convolution: Learning the shape of convolution for image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yeonwoo Jeong, Yoonsung Kim, and Hyun Oh Song. End-to-end efficient representation learning via cascading combinatorial optimization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Saumya Jetley, Naila Murray, and Eleonora Vig. End-to-end saliency mapping via probability distribution prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Saumya Jetley, Michael Sapienza, Stuart Golodetz, and Philip H. S. Torr. Straight to shapes: Real-time detection of encoded shapes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Roy J. Jevnisek and Shai Avidan. Co-occurrence filter. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Dinghuang Ji, Junghyun Kwon, Max McFarland, and Silvio Savarese. Deep view morphing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pan Ji, Hongdong Li, Mathieu Salzmann, and Yiran Zhong. Robust multi-body feature tracker: A segmentation-free approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kui Jia, Dacheng Tao, Shenghua Gao, and Xiangmin Xu. Improving training of deep neural networks via singular value bounding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Songhao Jia, Ding-Jie Chen, and Hwann-Tzong Chen. Instance-level meta normalization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Huaizu Jiang, Deqing Sun, Varun Jampani, Ming-Hsuan Yang, Erik Learned-Miller, and Jan Kautz. Super slo-mo: High quality estimation of multiple intermediate frames for video interpolation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Qing-Yuan Jiang and Wu-Jun Li. Deep cross-modal hashing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Xiaolong Jiang, Zehao Xiao, Baochang Zhang, Xiantong Zhen, Xianbin Cao, David Doermann, and Ling Shao. Crowd counting and density estimation by trellis encoder-decoder networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jianbo Jiao, Yunchao Wei, Zequn Jie, Honghui Shi, Rynson W.H. Lau, and Thomas S. Huang. Geometry-aware distillation for indoor semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zequn Jie, Yunchao Wei, Xiaojie Jin, Jiashi Feng, and Wei Liu. Deep self-taught learning for weakly supervised object localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zequn Jie, Pengfei Wang, Yonggen Ling, Bo Zhao, Yunchao Wei, Jiashi Feng, and Wei Liu. Left-right comparative recurrent model for stereo matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Meiguang Jin, Stefan Roth, and Paolo Favaro. Noise-blind image deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Meiguang Jin, Givi Meishvili, and Paolo Favaro. Learning to extract a video sequence from a single motion-blurred image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sheng Jin, Wentao Liu, Wanli Ouyang, and Chen Qian. Multi-person articulated tracking with spatial and temporal embeddings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Younghyun Jo, Seoung Wug Oh, Jaeyeon Kang, and Seon Joo Kim. Deep video super-resolution network using dynamic upsampling filters without explicit motion compensation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ole Johannsen, Antonin Sulc, and Bastian Goldluecke. What sparse light field coding reveals about scene structure. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Joakim Johnander, Martin Danelljan, Emil Brissman, Fahad Shahbaz Khan, and Michael Felsberg. A generative appearance model for end-to-end video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Edward Johns, Stefan Leutenegger, and Andrew J. Davison. Pairwise decomposition of image sequences for active multi-view recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Justin Johnson, Andrej Karpathy, and Li Fei-Fei. Denscap: Fully convolutional localization networks for dense captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Justin Johnson, Bharath Hariharan, Laurens van der Maaten, Li Fei-Fei, C. Lawrence Zitnick, and Ross Girshick. Clevr: A diagnostic dataset for compositional language and elementary visual reasoning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Justin Johnson, Agrim Gupta, and Li Fei-Fei. Image generation from scene graphs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Nick Johnston, Damien Vincent, David Minnen, Michele Covell, Saurabh Singh, Troy Chinen, Sung Jin Hwang, Joel Shor, and George Toderici. Improved lossy image compression with priming and spatially adaptive bit rates for recurrent networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- DongGyu Joo, Doyeon Kim, and Junmo Kim. Generating a fusion image: One’s identity and another’s shape. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hanbyul Joo, Tomas Simon, Mina Cikara, and Yaser Sheikh. Towards social artificial intelligence: Nonverbal social signal prediction in a triadic interaction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kyungdon Joo, Tae-Hyun Oh, Junsik Kim, and In So Kweon. Globally optimal manhattan frame estimation in real-time. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Seong Joon Oh, Rodrigo Benenson, Anna Khoreva, Zeynep Akata, Mario Fritz, and Bernt Schiele. Exploiting saliency for object segmentation from image level labels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- David Joseph Tan, Thomas Cashman, Jonathan Taylor, Andrew Fitzgibbon, Daniel Tarlow, Sameh Khamis, Shahram Izadi, and Jamie Shotton. Fits like a glove: Rapid and reliable hand shape personalization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Ajjen Joshi, Soumya Ghosh, Margrit Betke, Stan Sclaroff, and Hanspeter Pfister. Personalizing gesture recognition using hierarchical bayesian neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amin Jourabloo and Xiaoming Liu. Large-pose face alignment via cnn-based dense 3d model fitting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Fujiao Ju, Yanfeng Sun, Junbin Gao, Simeng Liu, Yongli Hu, and Baocai Yin. Mixture of bilateral-projection two-dimensional probabilistic principal component analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Felix Juefei-Xu, Vishnu Naresh Boddeti, and Marios Savvides. Local binary convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Felix Juefei-Xu, Vishnu Naresh Boddeti, and Marios Savvides. Perturbative neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Florian Jug, Evgeny Levinkov, Corinna Blasse, Eugene W. Myers, and Bjoern Andres. Moral lineage tracing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yeong Jun Koh and Chang-Su Kim. Primary object segmentation in videos based on region augmentation and reduction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yeong Jun Koh, Won-Dong Jang, and Chang-Su Kim. Pod: Discovering primary objects in videos based on evolutionary refinement of object recurrence, background, and primary object models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jake Zhao (Junbo) and Kyunghyun Cho. Retrieval-augmented convolutional neural networks against adversarial examples. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sangil Jung, Changyong Son, Seohyung Lee, Jinwoo Son, Jae-Joon Han, Youngjun Kwak, Sung Ju Hwang, and Changkyu Choi. Learning to quantize deep networks by optimizing quantization intervals with task loss. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Felix Järemo Lawin, Martin Danelljan, Fahad Shahbaz Khan, Per-Erik Forssén, and Michael Felsberg. Density adaptive point set registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Achuta Kadambi, Jamie Schiel, and Ramesh Raskar. Macroscopic interferometry: Rethinking depth estimation with frequency-domain time-of-flight. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kushal Kafle and Christopher Kanan. Answer-type prediction for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kushal Kafle, Brian Price, Scott Cohen, and Christopher Kanan. Dvqa: Understanding data visualizations via question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mahdi M. Kalayeh, Boqing Gong, and Mubarak Shah. Improving facial attribute prediction using semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mahdi M. Kalayeh, Emrah Basaran, Muhittin Gökmen, Mustafa E. Kamasak, and Mubarak Shah. Human semantic parsing for person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Evangelos Kalogerakis, Melinos Averkiou, Subhransu Maji, and Siddhartha Chaudhuri. 3d shape segmentation with projective convolutional networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Irene Kaltenmark, Benjamin Charlier, and Nicolas Charon. A general framework for curve and surface comparison and registration with oriented varifolds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Michael Kampffmeyer, Yinbo Chen, Xiaodan Liang, Hao Wang, Yujia Zhang, and Eric P. Xing. Rethinking knowledge graph propagation for zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Meina Kan, Shiguang Shan, and Xilin Chen. Multi-view deep network for cross-view classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Angjoo Kanazawa, David W. Jacobs, and Manmohan Chandraker. WarpNet: Weakly supervised matching for single-view reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Angjoo Kanazawa, Michael J. Black, David W. Jacobs, and Jitendra Malik. End-to-end recovery of human shape and pose. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Angjoo Kanazawa, Jason Y. Zhang, Panna Felsen, and Jitendra Malik. Learning 3d human dynamics from video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Can Kanbak, Seyed-Mohsen Moosavi-Dezfooli, and Pascal Frossard. Geometric robustness of deep networks: Analysis and improvement. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Atsushi Kanehira and Tatsuya Harada. Multi-label ranking from positive and unlabeled data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Atsushi Kanehira, Luc Van Gool, Yoshitaka Ushiku, and Tatsuya Harada. Viewpoint-aware video summarization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Atsushi Kanehira, Kentaro Takemoto, Sho Inayoshi, and Tatsuya Harada. Multimodal explanations by predicting counterfactuality in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Takuhiro Kaneko, Kaoru Hiramatsu, and Kunio Kashino. Generative attribute controller with conditional filtered generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Takuhiro Kaneko, Kaoru Hiramatsu, and Kunio Kashino. Generative adversarial image synthesis with decision tree latent controller. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Takuhiro Kaneko, Yoshitaka Ushiku, and Tatsuya Harada. Label-noise robust generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Asako Kanezaki, Yasuyuki Matsushita, and Yoshifumi Nishida. Rotationnet: Joint object categorization and pose estimation using multiviews from unsupervised viewpoints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Guoliang Kang, Lu Jiang, Yi Yang, and Alexander G. Hauptmann. Contrastive adaptation network for unsupervised domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Kai Kang, Wanli Ouyang, Hongsheng Li, and Xiaogang Wang. Object detection from video tubelets with convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kai Kang, Hongsheng Li, Tong Xiao, Wanli Ouyang, Junjie Yan, Xihui Liu, and Xiaogang Wang. Object detection in videos with tubelet proposal networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hariprasad Kannan, Nikos Komodakis, and Nikos Paragios. Newton-type methods for inference in higher-order markov random fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amlan Kar, Nishant Rai, Karan Sikka, and Gaurav Sharma. Adascan: Adaptive scan pooling in deep convolutional neural networks for human action recognition in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Nour Kaessli, Zeynep Akata, Bernt Schiele, and Andreas Bulling. Gaze embeddings for zero-shot image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Nikolaos Karianakis, Jingming Dong, and Stefano Soatto. An empirical evaluation of current convolutional architectures’ ability to manage nuisance location and scale variability. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Leonid Karlinsky, Joseph Shtok, Yochay Tzur, and Asaf Tzadok. Fine-grained recognition of thousands of object categories with single-example training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Leonid Karlinsky, Joseph Shtok, Sivan Harary, Eli Schwartz, Amit Aides, Rogerio Feris, Raja Giryes, and Alex M. Bronstein. Repmet: Representative-based metric learning for classification and few-shot object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tero Karras, Samuli Laine, and Timo Aila. A style-based generator architecture for generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ugur Kart, Alan Lukezic, Matej Kristan, Joni-Kristian Kamarainen, and Jiri Matas. Object tracking by reconstruction with view-specific discriminative correlation filters. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yoni Kasten, Amnon Geifman, Meirav Galun, and Ronen Basri. Gpsfm: Global projective sfm using algebraic constraints on multi-view fundamental matrices. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rotal Kat, Roy Jevnisek, and Shai Avidan. Matching pixels using co-occurrence statistics. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hiroharu Kato and Tatsuya Harada. Learning view priors for single-view 3d reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hiroharu Kato, Yoshitaka Ushiku, and Tatsuya Harada. Neural 3d mesh renderer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hiroyuki Kayaba and Yuji Kokumai. Non-contact full field vibration measurement based on phase-shifting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Liyiming Ke, Xiujun Li, Yonatan Bisk, Ari Holtzman, Zhe Gan, Jingjing Liu, Jianfeng Gao, Yejin Choi, and Siddhartha Srinivasa. Tactical rewind: Self-correction via backtracking in vision-and-language navigation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Wei Ke, Jie Chen, Jianbin Jiao, Guoying Zhao, and Qixiang Ye. Srn: Side-output residual network for object symmetry detection in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Wadim Kehl, Federico Tombari, Slobodan Ilic, and Nassir Navab. Real-time 3d model tracking in color and depth on a single cpu core. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Michel Keller, Zetao Chen, Fabiola Maffra, Patrik Schmuck, and Margarita Chli. Learning deep descriptors with scale-aware triplet networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Aniruddha Kembhavi, Minjoon Seo, Dustin Schwenk, Jonghyun Choi, Ali Farhadi, and Hannaneh Hajishirzi. Are you smarter than a sixth grader? textbook question answering for multimodal machine comprehension. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ira Kemelmacher-Shlizerman, Steven M. Seitz, Daniel Miller, and Evan Brossard. The megaface benchmark: 1 million faces for recognition at scale. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Alex Kendall and Roberto Cipolla. Geometric loss functions for camera pose regression with deep learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alex Kendall, Yarin Gal, and Roberto Cipolla. Multi-task learning using uncertainty to weigh losses for scene geometry and semantics. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rohit Keshari, Mayank Vatsa, Richa Singh, and Afzel Noore. Learning structure and strength of cnn filters for small sample size training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Naeemullah Khan and Ganesh Sundaramoorthi. Learned shape-tailored descriptors for segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Naeemullah Khan, Byung-Woo Hong, Anthony Yezzi, and Ganesh Sundaramoorthi. Coarse-to-fine segmentation with shape-tailored continuum scale spaces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Salman Khan, Munawar Hayat, Syed Waqas Zamir, Jianbing Shen, and Ling Shao. Striking the right balance with uncertainty. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Anna Khoreva, Rodrigo Benenson, Mohamed Omran, Matthias Hein, and Bernt Schiele. Weakly supervised object boundaries. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Anna Khoreva, Rodrigo Benenson, Jan Hosang, Matthias Hein, and Bernt Schiele. Simple does it: Weakly supervised instance and semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Valentin Khrulkov and Ivan Oseledets. Art of singular vectors and universal adversarial perturbations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- D. Khue Le-Huu and Nikos Paragios. Alternating direction graph matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yuka Kihara, Matvey Soloviev, and Tsuhan Chen. In the shadows, shape priors shine: Using occlusion to improve multi-region segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Edward Kim, Darryl Hannan, and Garrett Kenyon. Deep sparse coding for invariant multimodal halle berry neurons. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jiwon Kim, Jung Kwon Lee, and Kyoung Mu Lee. Deeply-recursive convolutional network for image super-resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jongmin Kim, Taesup Kim, Sungwoong Kim, and Chang D. Yoo. Edge-labeling graph neural network for few-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jongyoo Kim and Sanghoon Lee. Deep learning of human visual sensitivity in image quality assessment framework. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vamsi Kiran Adhikarla, Marek Vinkler, Denis Sumin, Rafal K. Mantiuk, Karol Myszkowski, Hans-Peter Seidel, and Piotr Didyk. Towards a quality metric for dense light fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alexander Kirillov, Evgeny Levinkov, Bjoern Andres, Bogdan Savchynskyy, and Carsten Rother. Instancecut: From edges to instances with multicut. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alexander Kirillov, Ross Girshick, Kaiming He, and Piotr Dollar. Panoptic feature pyramid networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Benjamin Klein and Lior Wolf. End-to-end supervised product quantization for image search and retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Netanel Kligler, Sagi Katz, and Ayellet Tal. Document enhancement using visibility detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Idan Kligvasser, Tamar Rott Shaham, and Tomer Michaeli. xunit: Learning a spatial activation function for efficient image restoration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Patrick Knobelreiter, Christian Reinbacher, Alexander Shekhovtsov, and Thomas Pock. End-to-end training of hybrid cnn-crf models for stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Takumi Kobayashi. Structured feature similarity with explicit feature map. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Takumi Kobayashi. Analyzing filters toward efficient convnet. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Muhammed Kocabas, Salih Karagoz, and Emre Akbas. Self-supervised learning of 3d human pose using multi-view geometry. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sebastian Koch, Albert Matveev, Zhongshi Jiang, Francis Williams, Alexey Artemov, Evgeny Burnaev, Marc Alexa, Denis Zorin, and Daniele Panozzo. Abc: A big cad model dataset for geometric deep learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Elyor Kodirov, Tao Xiang, and Shaogang Gong. Semantic autoencoder for zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Filippos Kokkinos and Stamatis Lefkimmiatis. Iterative residual cnns for burst photography applications. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Iasonas Kokkinos. Ubernet: Training a universal convolutional neural network for low-, mid-, and high-level vision using diverse datasets and limited memory. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amir Kolaman, Maxim Lvov, Rami Hagege, and Hugo Guterman. Amplitude modulated video camera - light separation in dynamic scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Alexander Kolesnikov, Xiaohua Zhai, and Lucas Beyer. Revisiting self-supervised visual representation learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nicholas Kolkin, Jason Salavon, and Gregory Shakhnarovich. Style transfer by relaxed optimal transport and self-similarity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Oscar Koller, Hermann Ney, and Richard Bowden. Deep hand: How to train a cnn on 1 million hand images when your data is continuous and weakly labelled. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Oscar Koller, Sepehr Zargaran, and Hermann Ney. Re-sign: Re-aligned end-to-end sequence modelling with deep recurrent cnn-hmms. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Nikos Kolotouros, Georgios Pavlakos, and Kostas Daniilidis. Convolutional mesh regression for single-image human shape reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Soheil Kolouri, Yang Zou, and Gustavo K. Rohde. Sliced wasserstein kernels for probability distributions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Soheil Kolouri, Gustavo K. Rohde, and Heiko Hoffmann. Sliced wasserstein distance for learning gaussian mixture models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Artem Komarichev, Zichun Zhong, and Jing Hua. A-cnn: Annularly convolutional neural networks on point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Shu Kong and Charless Fowlkes. Low-rank bilinear pooling for fine-grained classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shu Kong and Charless C. Fowlkes. Recurrent scene parsing with perspective understanding in the loop. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tao Kong, Anbang Yao, Yurong Chen, and Fuchun Sun. Hypernet: Towards accurate region proposal generation and joint object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Piotr Koniusz and Anoop Cherian. Sparse coding for third-order super-symmetric tensor descriptors with application to texture recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Piotr Koniusz, Yusuf Tas, and Fatih Porikli. Domain adaptation by mixture of alignments of second- or higher-order scatter tensors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Piotr Koniusz, Hongguang Zhang, and Fatih Porikli. A deeper look at power normalizations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Theodora Kontogianni, Markus Mathias, and Bastian Leibe. Incremental object discovery in time-varying image collections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Ksenia Konyushkova, Jasper Uijlings, Christoph H. Lampert, and Vittorio Ferrari. Learning intelligent dialogs for bounding box annotation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jari Korhonen. Assessing personally perceived image quality via image features and collaborative filtering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Simon Korman, Mark Milam, and Stefano Soatto. Oatm: Occlusion aware template matching by consensus set maximization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Simon Kornblith, Jonathon Shlens, and Quoc V. Le. Do better imagenet models transfer better? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Adam Kortylewski, Aleksander Wieczorek, Mario Wieser, Clemens Blumer, Sonali Parbhoo, Andreas Morel-Forster, Volker Roth, and Thomas Vetter. Greedy structure learning of hierarchical compositional models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Pawel Korus and Nasir Memon. Content authentication for neural imaging pipelines: End-to-end optimization of photo provenance in complex distribution channels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jean Kossaifi, Linh Tran, Yannis Panagakis, and Maja Pantic. Gagan: Geometry-aware generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jean Kossaifi, Adrian Bulat, Georgios Tzimiropoulos, and Maja Pantic. T-net: Parametrizing fully convolutional nets with a single high-order tensor. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ronak Kosti, Jose M. Alvarez, Adria Recasens, and Agata Lapedriza. Emotion recognition in context. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ilya Kostrikov, Zhongshi Jiang, Daniele Panozzo, Denis Zorin, and Joan Bruna. Surface networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Manikanta Kotaru and Sachin Katti. Position tracking for virtual reality using commodity wifi. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Dmytro Kotovenko, Artsiom Sanakoyeu, Pingchuan Ma, Sabine Lang, and Bjorn Ommer. A content transformation block for image style transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Satwik Kottur, Ramakrishna Vedantam, Jose M. F. Moura, and Devi Parikh. Visual word2vec (vis-w2v): Learning visually grounded word embeddings using abstract scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Balazs Kovacs, Sean Bell, Noah Snavely, and Kavita Bala. Shading annotations in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Koji Koyamatsu, Daichi Hidaka, Takahiro Okabe, and Hendrik P. A. Lensch. Reflective and fluorescent separation under narrow-band illumination. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jedrzej Kozerawski and Matthew Turk. Clear: Cumulative learning for one-shot one-class image recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kyle Krafka, Aditya Khosla, Petr Kellnhofer, Harini Kannan, Suchendra Bhandarkar, Wojciech Matusik, and Antonio Torralba. Eye tracking for everyone. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Jonathan Krause, Justin Johnson, Ranjay Krishna, and Li Fei-Fei. A hierarchical approach for generating descriptive image paragraphs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Sven Kreiss, Lorenzo Bertoni, and Alexandre Alahi. Pifpaf: Composite fields for human pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ranjay Krishna, Ines Chami, Michael Bernstein, and Li Fei-Fei. Referring relationships. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ranjay Krishna, Michael Bernstein, and Li Fei-Fei. Information maximizing visual question generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Alexander Krull, Eric Brachmann, Sebastian Nowozin, Frank Michel, Jamie Shotton, and Carsten Rother. Poseagent: Budget-constrained 6d object pose estimation via reinforcement learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alexander Krull, Tim-Oliver Buchholz, and Florian Jug. Noise2void - learning denoising from single noisy images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Srinivas S. S. Kruthiventi, Vennela Gudisa, Jaley H. Dholakiya, and R. Venkatesh Babu. Saliency unified: A deep architecture for simultaneous eye fixation prediction and salient object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jason Ku, Alex D. Pon, and Steven L. Waslander. Monocular 3d object detection leveraging accurate proposals and shape reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jason Kuen, Zhenhua Wang, and Gang Wang. Recurrent attentional networks for saliency detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jason Kuen, Xiangfei Kong, Zhe Lin, Gang Wang, Jianxiong Yin, Simon See, and Yap-Peng Tan. Stochastic downsampling for cost-adjustable inference and improved regularization in convolutional networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zuzana Kukelova and Viktor Larsson. Radial distortion triangulation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zuzana Kukelova, Jan Heller, and Andrew Fitzgibbon. Efficient intersection of three quadrics and applications in computer vision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zuzana Kukelova, Joe Kileel, Bernd Sturmfels, and Tomas Pajdla. A clever elimination strategy for efficient minimal solvers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anna Kukleva, Hilde Kuehne, Fadime Sener, and Jurgen Gall. Unsupervised learning of action classes with continuous temporal embedding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kuldeep Kulkarni, Suhas Lohit, Pavan Turaga, Ronan Kerviche, and Amit Ashok. Reconnet: Non-iterative reconstruction of images from compressively sensed measurements. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Suryansh Kumar. Jumping manifolds: Geometry aware dense non-rigid structure from motion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Suryansh Kumar, Anoop Cherian, Yuchao Dai, and Hongdong Li. Scalable dense non-rigid structure-from-motion: A grassmannian perspective. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Vijay Kumar, Anoop Namboodiri, Manohar Paluri, and C. V. Jawahar. Pose-aware person recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vijay Kumar B G, Gustavo Carneiro, and Ian Reid. Learning local image descriptors with deep siamese and triplet convolutional networks by minimising global loss functions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Soumava Kumar Roy, Zakaria Mhammedi, and Mehrtash Harandi. Geometry aware constrained optimization techniques for deep learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sudhakar Kumawat and Shanmuganathan Raman. Lp-3dcnn: Unveiling local phase in 3d convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Abhijit Kundu, Vibhav Vineet, and Vladlen Koltun. Feature space optimization for semantic video segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Orest Kupyn, Volodymyr Budzan, Mykola Mykhailych, Dmytro Mishkin, and Jiří Matas. Deblurgan: Blind motion deblurring using conditional adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Vinod Kumar Kurmi, Shanu Kumar, and Vinay P. Namboodiri. Attending to discriminative certainty for domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ilja Kuzborskij, Fabio Maria Carlucci, and Barbara Caputo. When naive bayes nearest neighbors meet convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yevhen Kuznetsov, Jorg Stuckler, and Bastian Leibe. Semi-supervised deep learning for monocular depth map prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Suha Kwak, Minsu Cho, and Ivan Laptev. Thin-slicing for pose: Learning to understand pose without explicit pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Roland Kwitt, Sebastian Hegenbart, and Marc Niethammer. One-shot learning of scene locations via feature trajectory transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yong-Hoon Kwon and Min-Gyu Park. Predicting future frames using retrospective cycle gan. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zorah Lahner, Emanuele Rodola, Frank R. Schmidt, Michael M. Bronstein, and Daniel Cremers. Efficient globally optimal 2d-to-3d deformable shape matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hsueh-Ying Lai, Yi-Hsuan Tsai, and Wei-Chen Chiu. Bridging stereo matching and optical flow via spatiotemporal correspondence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wei-Sheng Lai, Jia-Bin Huang, Zhe Hu, Narendra Ahuja, and Ming-Hsuan Yang. A comparative study for single image blind deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Wei-Sheng Lai, Jia-Bin Huang, Narendra Ahuja, and Ming-Hsuan Yang. Deep laplacian pyramid networks for fast and accurate super-resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Rodney LaLonde, Dong Zhang, and Mubarak Shah. Clusternet: Detecting small objects in large scenes by exploiting spatio-temporal information. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Michael Lam, Behrooz Mahasseni, and Sinisa Todorovic. Fine-grained recognition as hsnet search for informative image parts. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- John Lambert, Ozan Sener, and Silvio Savarese. Deep learning under privileged information using heteroscedastic dropout. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Shiyi Lan, Ruichi Yu, Gang Yu, and Larry S. Davis. Modeling local geometric structure of 3d point clouds using geo-cnn. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ziquan Lan, David Hsu, and Gim Hee Lee. Solving the perspective-2-point problem for flying-camera photo composition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Loic Landrieu and Mohamed Boussaha. Point cloud oversegmentation with graph-structured deep metric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Loic Landrieu and Martin Simonovsky. Large-scale point cloud semantic segmentation with superpoint graphs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Alex H. Lang, Sourabh Vora, Holger Caesar, Lubing Zhou, Jiong Yang, and Oscar Beijbom. Pointpillars: Fast encoders for object detection from point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jan-Hendrik Lange, Bjoern Andres, and Paul Swoboda. Combinatorial persistency criteria for multicut and max-cut. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dong Lao and Ganesh Sundaramoorthi. Minimum delay moving object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yizhen Lao and Omar Ait-Aider. A robust method for strong rolling shutter effects correction using lines with automatic feature selection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Maksim Lapin, Matthias Hein, and Bernt Schiele. Loss functions for top-k error: Analysis and insights. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Dmitry Laptev, Nikolay Savinov, Joachim M. Buhmann, and Marc Pollefeys. Ti-pooling: Transformation-invariant pooling for feature learning in convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Sebastian Latuschkin, Alexander Binder, Gregoire Montavon, Klaus-Robert Muller, and Wojciech Samek. Analyzing classifiers: Fisher vectors and deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mans Larsson, Erik Stenborg, Lars Hammarstrand, Marc Pollefeys, Torsten Sattler, and Fredrik Kahl. A cross-season correspondence dataset for robust semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Viktor Larsson and Carl Olsson. Compact matrix factorization with dependent subspaces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Viktor Larsson, Zuzana Kukelova, and Yinqiang Zheng. Camera pose estimation with unknown principal point. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christoph Lassner, Javier Romero, Martin Kiefel, Federica Bogo, Michael J. Black, and Peter V. Gehler. Unite the people: Closing the loop between 3d and 2d human representations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Stephane Lathuiliere, Remi Juge, Pablo Mesejo, Rafael Munoz-Salinas, and Radu Horaud. Deep mixture of linear inverse regressions applied to head-pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Emanuel Laude, Jan-Hendrik Lange, Jonas Schüpfer, Csaba Domokos, Laura Leal-Taixé, Frank R. Schmidt, Bjoern Andres, and Daniel Cremers. Discrete-continuous admm for transductive inference in higher-order mrfs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Andrew Lavin and Scott Gray. Fast algorithms for convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Marc T. Law, YaoLiang Yu, Matthieu Cord, and Eric P. Xing. Closed-form training of mahalanobis distance for supervised clustering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Marc T. Law, Yaoliang Yu, Raquel Urtasun, Richard S. Zemel, and Eric P. Xing. Efficient multiple instance metric learning using weakly supervised data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Huu Le, Tat-Jun Chin, and David Suter. Conformal surface alignment with optimal mobius search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Huu Le, Tat-Jun Chin, and David Suter. An exact penalty method for locally convergent maximum consensus. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Huu M. Le, Thanh-Toan Do, Tuan Hoang, and Ngai-Man Cheung. Sdrsac: Semidefinite-based randomized approach for robust point cloud registration without correspondences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Truc Le and Ye Duan. Pointgrid: A deep network for 3d shape understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Colin Lea, Michael D. Flynn, Rene Vidal, Austin Reiter, and Gregory D. Hager. Temporal convolutional networks for action segmentation and detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vadim Lebedev and Victor Lempitsky. Fast convnets using group-wise brain damage. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Christian Ledig, Lucas Theis, Ferenc Huszar, Jose Caballero, Andrew Cunningham, Alejandro Acosta, Andrew Aitken, Alykhan Tejani, Johannes Totz, Zehan Wang, and Wenzhe Shi. Photo-realistic single image super-resolution using a generative adversarial network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gayoung Lee, Yu-Wing Tai, and Junmo Kim. Deep saliency with encoded low level distance map and high level features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jae-Han Lee, Minhyeok Heo, Kyung-Rae Kim, and Chang-Su Kim. Single-image depth estimation based on fourier domain analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Junghyup Lee, Dohyung Kim, Jean Ponce, and Bumsu Ham. Sfnet: Learning object-aware semantic correspondence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Namhoon Lee, Wongun Choi, Paul Vernaza, Christopher B. Choy, Philip H. S. Torr, and Manmohan Chandraker. Desire: Distant future prediction in dynamic scenes with interacting agents. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Stamatios Lefkimmiatis. Non-local color image denoising with convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Stamatios Lefkimmiatis. Universal denoising networks : A novel cnn architecture for image denoising. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Chloe LeGendre, Wan-Chun Ma, Graham Fyfe, John Flynn, Laurent Charbonnel, Jay Busch, and Paul Debevec. Deeplight: Learning illumination for unconstrained mobile mixed reality. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chenyang Lei and Qifeng Chen. Fully automatic video colorization with self-regularization and diversity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chenyi Lei, Dong Liu, Weiping Li, Zheng-Jun Zha, and Houqiang Li. Comparative deep learning of hybrid representations for image recommendations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Peng Lei, Fuxin Li, and Sinisa Todorovic. Boundary flow: A siamese network that predicts boundary motion without training on motion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Carl Lemaire, Andrew Achkar, and Pierre-Marc Jodoin. Structured pruning of neural networks with budget-aware regularization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Evgeny Levinkov, Jonas Uhrig, Siyu Tang, Mohamed Omran, Eldar Insafutdinov, Alexander Kirillov, Carsten Rother, Thomas Brox, Bernt Schiele, and Bjoern Andres. Joint graph decomposition node labeling: Problem, algorithms, applications. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Aviad Levis, Yoav Y. Schechner, and Anthony B. Davis. Multiple-scattering microphysics tomography. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Aviad Levis, Yoav Y. Schechner, and Ronen Talmon. Statistical tomography of microscopic life. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jose Lezama, Qiang Qiu, and Guillermo Sapiro. Not afraid of the dark: Nir-vis face recognition via cross-spectral hallucination and low-rank embedding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- José Lezama, Qiang Qiu, Pablo Musé, and Guillermo Sapiro. OIÉ: Orthogonal low-rank embedding - a plug and play geometric loss for deep learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ang Li, Jin Sun, Joe Yue-Hei Ng, Ruichi Yu, Vlad I. Morariu, and Larry S. Davis. Generating holistic 3d scene abstractions for text-based image retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guanbin Li and Yizhou Yu. Deep contrast learning for salient object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hongyang Li, David Eigen, Samuel Dodge, Matthew Zeiler, and Xiaogang Wang. Finding task-relevant features for few-shot learning by category traversal. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Shuang Li, Slawomir Bak, Peter Carr, and Xiaogang Wang. Diversity regularized spatiotemporal attention for video-based person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Dongze Lian, Jing Li, Jia Zheng, Weixin Luo, and Shenghua Gao. Density map regression guided detection network for rgb-d crowd counting and localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jian Liang, Ran He, Zhenan Sun, and Tieniu Tan. Distant supervised centroid shift: A simple and efficient approach to visual domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xiaodan Liang, Yunchao Wei, Xiaohui Shen, Zequn Jie, Jiashi Feng, Liang Lin, and Shuicheng Yan. Reversible recursive instance-level object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Xiaodan Liang, Lisa Lee, and Eric P. Xing. Deep variation-structured reinforcement learning for visual relationship and attribute detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Xiaodan Liang, Hongfei Zhou, and Eric Xing. Dynamic-structured semantic propagation network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fangzhou Liao, Ming Liang, Yinpeng Dong, Tianyu Pang, Xiaolin Hu, and Jun Zhu. Defense against adversarial attacks using high-level representation guided denoiser. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yuan-Hong Liao, Xavier Puig, Marko Boben, Antonio Torralba, and Sanja Fidler. Synthesizing environment-aware activities via activity sketches. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yann Lifchitz, Yannis Avrithis, Sylvaine Picard, and Andrei Bursuc. Dense classification and implanting for few-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ivan Lillo, Juan Carlos Niebles, and Alvaro Soto. A hierarchical pose-based approach to complex action understanding using dictionaries of actionlets and motion poselets. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chen-Hsuan Lin, Oliver Wang, Bryan C. Russell, Eli Shechtman, Vladimir G. Kim, Matthew Fisher, and Simon Lucey. Photometric mesh optimization for video-aligned 3d object reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chung-Ching Lin and Ying Hung. A prior-less method for multi-face tracking in unconstrained videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kevin Lin, Jiwen Lu, Chu-Song Chen, and Jie Zhou. Learning compact binary descriptors with unsupervised deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mude Lin, Liang Lin, Xiaodan Liang, Keze Wang, and Hui Cheng. Recurrent 3d pose sequence machines. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- David B. Lindell, Gordon Wetzstein, and Vladlen Koltun. Acoustic non-line-of-sight imaging. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Huan Ling, Jun Gao, Amlan Kar, Wenzheng Chen, and Sanja Fidler. Fast interactive object annotation with curve-gcn. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Or Litany, Alex Bronstein, Michael Bronstein, and Ameesh Makadia. Deformable shape completion with graph convolutional autoencoders. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Etai Littwin and Lior Wolf. The multiverse loss for robust transfer learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chen Liu, Pushmeet Kohli, and Yasutaka Furukawa. Layered scene decomposition via the occlusion-crf. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chenxi Liu, Liang-Chieh Chen, Florian Schroff, Hartwig Adam, Wei Hua, Alan L. Yuille, and Li Fei-Fei. Auto-deeplab: Hierarchical neural architecture search for semantic image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Weiyang Liu, Yandong Wen, Zhiding Yu, Ming Li, Bhiksha Raj, and Le Song. Sphereface: Deep hypersphere embedding for face recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yaojie Liu, Amin Jourabloo, and Xiaoming Liu. Learning deep models for face anti-spoofing: Binary or auxiliary supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Alex Locher, Michal Perdoch, and Luc Van Gool. Progressive prioritized multi-view stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Fotios Logothetis, Roberto Mecca, and Roberto Cipolla. Semi-calibrated near field photometric stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Suhas Lohit, Qiao Wang, and Pavan Turaga. Temporal transformer networks: Joint learning of invariant and discriminative time warping. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chengjiang Long and Gang Hua. Correlational gaussian processes for cross-domain visual recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Fuchen Long, Ting Yao, Zhaofan Qiu, Xinmei Tian, Jiebo Luo, and Tao Mei. Gaussian temporal awareness networks for action localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xiang Long, Chuang Gan, Gerard de Melo, Jiajun Wu, Xiao Liu, and Shilei Wen. Attention clusters: Purely attention based local feature integration for video classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Manuel Lopez, Roger Mari, Pau Gargallo, Yubin Kuang, Javier Gonzalez-Jimenez, and Gloria Haro. Deep single image camera calibration with radial distortion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- David Lopez-Paz, Robert Nishihara, Soumith Chintala, Bernhard Scholkopf, and Leon Bottou. Discovering causal signals in images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Dominik Lorenz, Leonard Bereska, Timo Milbich, and Bjorn Ommer. Unsupervised part-based disentangling of object shape and appearance. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Or Lotan and Michal Irani. Needle-match: Reliable patch matching under high uncertainty. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yihang Lou, Yan Bai, Jun Liu, Shiqi Wang, and Lingyu Duan. Veri-wild: A large dataset and a new method for vehicle re-identification in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Cewu Lu, Hao Su, Yonglu Li, Yongyi Lu, Li Yi, Chi-Keung Tang, and Leonidas J. Guibas. Beyond holistic object recognition: Enriching image understanding with part states. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jiasen Lu, Caiming Xiong, Devi Parikh, and Richard Socher. Knowing when to look: Adaptive attention via a visual sentinel for image captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Xiankai Lu, Wenguan Wang, Chao Ma, Jianbing Shen, Ling Shao, and Fatih Porikli. See more, know more: Unsupervised video object segmentation with co-attention siamese networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yao Lu, Xue Bai, Linda Shapiro, and Jue Wang. Coherent parametric contours for interactive video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Fujun Luan, Sylvain Paris, Eli Shechtman, and Kavita Bala. Deep photo style transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vincent Lui, Jonathon Gieves, Winston Yui, and Tom Drummond. Efficient subpixel refinement with symbolic linear predictors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Alan Lukezic, Tomas Vojir, Luka Cehovin Zajc, Jiri Matas, and Matej Kristan. Discriminative correlation filter with channel and spatial reliability. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guibo Luo, Yuesheng Zhu, Zhaotian Li, and Liming Zhang. A hole filling approach based on background reconstruction for view synthesis in 3d video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yawei Luo, Liang Zheng, Tao Guan, Junqing Yu, and Yi Yang. Taking a closer look at domain shift: Category-level adversaries for semantics consistent domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yue Luo, Jimmy Ren, Mude Lin, Jiahao Pang, Wenxiu Sun, Hongsheng Li, and Liang Lin. Single view stereo matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zelun Luo, Boya Peng, De-An Huang, Alexandre Alahi, and Li Fei-Fei. Unsupervised learning of long-term motion dynamics for videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Diogo C. Luvizon, David Picard, and Hedi Tabia. 2d/3d pose estimation and action recognition using multitask deep learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jiangjing Lv, Xiaohu Shao, Junliang Xing, Cheng Cheng, and Xi Zhou. A deep regression architecture with two-stage re-initialization for high performance facial landmark detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jianming Lv, Weihang Chen, Qing Li, and Can Yang. Unsupervised cross-dataset person re-identification by transfer learning of spatial-temporal patterns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zhaoyang Lv, Frank Dellaert, James M. Rehg, and Andreas Geiger. Taking a deeper look at the inverse compositional algorithm. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Pengyuan Lyu, Cong Yao, Wenhao Wu, Shuicheng Yan, and Xiang Bai. Multi-oriented scene text detection via corner localization and region segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Kede Ma, Qingbo Wu, Zhou Wang, Zhengfang Duanmu, Hongwei Yong, Hongliang Li, and Lei Zhang. Group mad competition - a new methodology to compare objective image quality models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Liqian Ma, Qianru Sun, Stamatios Georgoulis, Luc Van Gool, Bernt Schiele, and Mario Fritz. Disentangled person image generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Wei-Chiu Ma, De-An Huang, Namhoon Lee, and Kris M. Kitani. Forecasting interactive dynamics of pedestrians with fictitious play. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Wei-Chiu Ma, Shenlong Wang, Rui Hu, Yuwen Xiong, and Raquel Urtasun. Deep rigid instance scene flow. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Oisin Mac Aodha, Shihan Su, Yuxin Chen, Pietro Perona, and Yisong Yue. Teaching categories to human learners with visual explanations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Dennis Madsen, Marcel Lüthi, Andreas Schneider, and Thomas Vetter. Probabilistic joint face-skull modelling for facial reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Nicolas Maerki, Federico Perazzi, Oliver Wang, and Alexander Sorkine-Hornung. Bilateral space video segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Luca Magri and Andrea Fusiello. Multiple model fitting as a set coverage problem. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Luca Magri and Andrea Fusiello. Fitting multiple heterogeneous models by multi-class cascaded t-linkage. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tegan Maharaj, Nicolas Ballas, Anna Rohrbach, Aaron Courville, and Christopher Pal. A dataset and exploration of models for understanding video data through fill-in-the-blank question-answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Behrooz Mahasseni and Sinisa Todorovic. Regularizing long short term memory with 3d human-skeleton sequences for action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Behrooz Mahasseni, Michael Lam, and Sinisa Todorovic. Unsupervised video summarization with adversarial lstm networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- M. R. Mahesh Mohan and A. N. Rajagopalan. Divide and conquer for full-resolution light field deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Reza Mahjourian, Martin Wicke, and Anelia Angelova. Unsupervised learning of depth and ego-motion from monocular video using 3d geometric constraints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Long Mai, Hailin Jin, and Feng Liu. Composition-preserving deep photo aesthetics assessment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Long Mai, Hailin Jin, Zhe Lin, Chen Fang, Jonathan Brandt, and Feng Liu. Spatial-semantic image search by visual feature synthesis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Michael Maire, Takuya Narihira, and Stella X. Yu. Affinity cnn: Learning pixel-centric pairwise relations for figure/ground embedding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Soumajit Majumder and Angela Yao. Content-aware multi-level guidance for interactive instance segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Osama Makansi, Eddy Ilg, Ozgun Cicek, and Thomas Brox. Overcoming limitations of mixture density networks: A sampling and fitting framework for multimodal future prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yasushi Makihara, Atsuyuki Suzuki, Daigo Muramatsu, Xiang Li, and Yasushi Yagi. Joint intensity and spatial metric learning for robust gait recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Andrii Maksai and Pascal Fua. Eliminating exposure bias and metric mismatch in multiple object tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Andrii Maksai, Xinchao Wang, and Pascal Fua. What players do with the ball: A physically constrained interaction modeling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Anton Mallasto and Aasa Feragen. Wrapped gaussian process regression on riemannian manifolds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Arun Mallya and Svetlana Lazebnik. Packnet: Adding multiple tasks to a single network by iterative pruning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Abed Malti and Cedric Herzet. Elastic shape-from-template with spatially sparse deforming forces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Massimiliano Mancini, Lorenzo Porzi, Samuel Rota Bulò, Barbara Caputo, and Elisa Ricci. Boosting domain adaptation by discovering latent domains. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Massimiliano Mancini, Samuel Rota Bulò, Barbara Caputo, and Elisa Ricci. Adagraph: Unifying predictive and continuous domain adaptation through graphs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Devraj Mandal, Kunal N. Chaudhury, and Soma Biswas. Generalized semantic preserving hashing for n-label cross-modal retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Devraj Mandal, Sanath Narayan, Sai Kumar Dwivedi, Vikram Gupta, Shuaib Ahmed, Fahad Shahbaz Khan, and Ling Shao. Out-of-distribution detection for generalized zero-shot action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jacques Manderscheid, Amos Sironi, Nicolas Bourdis, Davide Migliore, and Vincent Lepetit. Speed invariant time surface for learning to detect corner points with event-based cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Fabian Manhardt, Wadim Kehl, and Adrien Gaidon. Roi-10d: Monocular lifting of 2d detection to 6d pose and metric shape. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Fabio Maninchedda, Martin R. Oswald, and Marc Pollefeys. Fast 3d reconstruction of faces with glasses. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Kevis-Kokitsi Maninis, Sergi Caelles, Jordi Pont-Tuset, and Luc Van Gool. Deep extreme cut: From extreme points to object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kevis-Kokitsi Maninis, Ilija Radosavovic, and Iasonas Kokkinos. Attentive single-tasking of multiple tasks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Varun Manjunatha, Nirat Saini, and Larry S. Davis. Explicit bias discovery in visual question answering models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jiayuan Mao, Tete Xiao, Yuning Jiang, and Zhimin Cao. What can help pedestrian detection? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Junhua Mao, Jonathan Huang, Alexander Toshev, Oana Camburu, Alan L. Yuille, and Kevin Murphy. Generation and comprehension of unambiguous object descriptions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Qi Mao, Hsin-Ying Lee, Hung-Yu Tseng, Siwei Ma, and Ming-Hsuan Yang. Mode seeking generative adversarial networks for diverse image synthesis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ana I. Maqueda, Antonio Loquercio, Guillermo Gallego, Narciso García, and Davide Scaramuzza. Event-based vision meets deep learning on steering prediction for self-driving cars. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Diego Marcos, Raffay Hamid, and Devis Tuia. Geospatial correspondences for multimodal registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Diego Marcos, Devis Tuia, Benjamin Kellenberger, Lisa Zhang, Min Bai, Renjie Liao, and Raquel Urtasun. Learning deep structured active contours end-to-end. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Dmitrii Marin, Meng Tang, Ismail Ben Ayed, and Yuri Boykov. Beyond gradient descent for regularized segmentation losses. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Manuel J. Marin-Jimenez, Vicky Kalogeiton, Pablo Medina-Suarez, and Andrew Zisserman. Laeonet: Revisiting people looking at each other in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kenneth Marino, Ruslan Salakhutdinov, and Abhinav Gupta. The more you know: Using knowledge graphs for image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kenneth Marino, Mohammad Rastegari, Ali Farhadi, and Roozbeh Mottaghi. Ok-vqa: A visual question answering benchmark requiring external knowledge. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Elisabeta Marinoiu, Mihai Zanfir, Vlad Olaru, and Cristian Sminchisescu. 3d human sensing, action and emotion recognition in robot assisted therapy of children with autism. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mark Marsden, Kevin McGuinness, Suzanne Little, Ciara E. Keogh, and Noel E. O'Connor. People, penguins and petri dishes: Adapting object counting models to new visual domains and object types without forgetting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Julieta Martinez, Michael J. Black, and Javier Romero. On human motion prediction using recurrent neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- David Mascharka, Philip Tran, Ryan Soklaski, and Arjun Majumdar. Transparency by design: Closing the gap between performance and interpretability in visual reasoning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Iacopo Masi, Stephen Rawls, Gerard Medioni, and Prem Natarajan. Pose-aware face recognition in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Francisco Massa, Bryan C. Russell, and Mathieu Aubry. Deep exemplar 2d-3d detection by adapting from real to rendered views. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Daniela Massiceti, N. Siddharth, Puneet K. Dokania, and Philip H.S. Torr. Flipdial: A generative model for two-way visual dialogue. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Brian Matejek, Daniel Haehn, Haidong Zhu, Donglai Wei, Toufiq Parag, and Hanspeter Pfister. Biologically-constrained graphs for global connectomics reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Stefan Mathe, Aleksis Pirinen, and Cristian Sminchisescu. Reinforcement learning for visual object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Alexander Mathews, Lexing Xie, and Xuming He. Semstyle: Learning to generate stylised image captions using unaligned text. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tetsu Matsukawa, Takahiro Okabe, Einoshin Suzuki, and Yoichi Sato. Hierarchical gaussian descriptor for person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Gellert Mattyus, Shenlong Wang, Sanja Fidler, and Raquel Urtasun. Hd maps: Fine-grained road segmentation by parsing ground and aerial images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nikolaus Mayer, Eddy Ilg, Philip Hausser, Philipp Fischer, Daniel Cremers, Alexey Dosovitskiy, and Thomas Brox. A large dataset to train convolutional networks for disparity, optical flow, and scene flow estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Niall McLaughlin, Jesus Martinez del Rincon, and Paul Miller. Recurrent convolutional network for video-based person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Éloi Mehr, André Lieutier, Fernando Sanchez Bermudez, Vincent Guitteny, Nicolas Thome, and Matthieu Cord. Manifold learning in quotient spaces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Nazanin Mehrasa, Akash Abdu Jyothi, Thibaut Durand, Jiawei He, Leonid Sigal, and Greg Mori. A variational auto-encoder model for stochastic point processes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dushyant Mehta, Kwang In Kim, and Christian Theobalt. On implicit filter level sparsity in convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yaron Meirovitch, Lu Mi, Hayk Saribekyan, Alexander Matveev, David Rolnick, and Nir Shavit. Cross-classification clustering: An efficient multi-object tracking technique for 3-d instance segmentation in connectomics. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Youssef A. Mejjati, Darren Cosker, and Kwang In Kim. Multi-task learning by maximizing statistical dependence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Abhimitra Meka, Maxim Maximov, Michael Zollhöfer, Avishek Chatterjee, Hans-Peter Seidel, Christian Richardt, and Christian Theobalt. Lime: Live intrinsic material estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Simone Melzi, Riccardo Spezialetti, Federico Tombari, Michael M. Bronstein, Luigi Di Stefano, and Emanuele Rodola. Gframes: Gradient-based local reference frame for 3d shape matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yifang Men, Zhouhui Lian, Yingmin Tang, and Jianguo Xiao. A common framework for interactive texture transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yifang Men, Zhouhui Lian, Yingmin Tang, and Jianguo Xiao. Dyntypo: Example-based dynamic text effects transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jingjing Meng, Hongxing Wang, Junsong Yuan, and Yap-Peng Tan. From keyframes to key objects: Video summarization by representative object proposal selection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jingke Meng, Sheng Wu, and Wei-Shi Zheng. Weakly supervised person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Fabian Mentzer, Eirikur Agustsson, Michael Tschannen, Radu Timofte, and Luc Van Gool. Conditional probability models for deep image compression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fabian Mentzer, Eirikur Agustsson, Michael Tschannen, Radu Timofte, and Luc Van Gool. Practical full resolution learned lossless image compression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Daniel Merget, Matthias Rock, and Gerhard Rigoll. Robust facial landmark detection via a fully-convolutional local-global context network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lars Mescheder, Michael Oechsle, Michael Niemeyer, Sebastian Nowozin, and Andreas Geiger. Occupancy networks: Learning 3d reconstruction in function space. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kourosh Meshgi, Shigeyuki Oba, and Shin Ishii. Efficient diverse ensemble for discriminative co-tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Moustafa Meshry, Dan B. Goldman, Sameh Khamis, Hugues Hoppe, Rohit Pandey, Noah Snavely, and Ricardo Martin-Brualla. Neural rerendering in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Gregory P. Meyer, Ankit Laddha, Eric Kee, Carlos Vallespi-Gonzalez, and Carl K. Wellington. Lasernet: An efficient probabilistic 3d object detector for autonomous driving. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Simone Meyer, Abdelaziz Djelouah, Brian McWilliams, Alexander Sorkine-Hornung, Markus Gross, and Christopher Schroers. Phasenet for video frame interpolation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jian-Xun Mi, Qiankun Fu, and Weisheng Li. Adaptive class preserving representation for image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Caijing Miao, Lingxi Xie, Fang Wan, Chi Su, Hongye Liu, Jianbin Jiao, and Qixiang Ye. Sixray: A large-scale security inspection x-ray benchmark for prohibited item discovery in overlapping images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xin Miao, Xiantong Zhen, Xianglong Liu, Cheng Deng, Vassilis Athitsos, and Heng Huang. Direct shape regression networks for end-to-end face alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Frank Michel, Alexander Kirillov, Eric Brachmann, Alexander Krull, Stefan Gumhold, Bogdan Savchynskyy, and Carsten Rother. Global hypothesis generation for 6d object pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Keisuke Midorikawa, Toshihiko Yamasaki, and Kiyoharu Aizawa. Uncalibrated photometric stereo by stepwise optimization using principal components of isotropic brdfs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ondrej Miksik, Juan-Manuel Perez-Rua, Philip H. S. Torr, and Patrick Perez. Roam: A rich object appearance model with application to rotoscoping. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ben Mildenhall, Jonathan T. Barron, Jiawen Chen, Dillon Sharlet, Ren Ng, and Robert Carroll. Burst denoising with kernel prediction networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Xiang Ming, Fangyun Wei, Ting Zhang, Dong Chen, and Fang Wen. Group sampling for scale invariant face detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Breton Minnehan and Andreas Savakis. Cascaded projection: End-to-end network compression and acceleration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Pedro Miraldo, Francisco Eiras, and Srikumar Ramalingam. Analytical modeling of vanishing points and curves in catadioptric cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pedro Miraldo, Surojit Saha, and Srikumar Ramalingam. Minimal solvers for mini-loop closures in 3d multi-scan alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Parsa Mirdehghan, Wenzheng Chen, and Kiriakos N. Kutulakos. Optimal structured light à la carte. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ishan Misra, C. Lawrence Zitnick, Margaret Mitchell, and Ross Girshick. Seeing through the human reporting bias: Visual classifiers from noisy human-centric labels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ishan Misra, Abhinav Gupta, and Martial Hebert. From red wine to red tomato: Composition with context. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ishan Misra, Ross Girshick, Rob Fergus, Martial Hebert, Abhinav Gupta, and Laurens van der Maaten. Learning by asking questions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Niluthpol Chowdhury Mithun, Sujoy Paul, and Amit K. Roy-Chowdhury. Weakly supervised video moment retrieval from text queries. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kaichun Mo, Shilin Zhu, Angel X. Chang, Li Yi, Subarna Tripathi, Leonidas J. Guibas, and Hao Su. Partnet: A large-scale benchmark for fine-grained and hierarchical part-level 3d object understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Zhipeng Mo, Boxin Shi, Sai-Kit Yeung, and Yasuyuki Matsushita. Radiometric calibration for internet photo collections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zhipeng Mo, Boxin Shi, Feng Lu, Sai-Kit Yeung, and Yasuyuki Matsushita. Uncalibrated photometric stereo under natural illumination. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Apostolos Modas, Seyed-Mohsen Moosavi-Dezfooli, and Pascal Frossard. Sparsefool: A few pixels make a big difference. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nima Mohajerin and Mohsen Rohani. Multi-step prediction of occupancy grid maps with recurrent neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Prithish Mohapatra, Michal Rolínek, C.V. Jawahar, Vladimir Kolmogorov, and M. Pawan Kumar. Efficient optimization for rank-based loss functions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pavlo Molchanov, Xiaodong Yang, Shalini Gupta, Kihwan Kim, Stephen Tyree, and Jan Kautz. Online detection and classification of dynamic hand gestures with recurrent 3d convolutional neural network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Pavlo Molchanov, Arun Mallya, Stephen Tyree, Iuri Frosio, and Jan Kautz. Importance estimation for neural network pruning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Thomas Mollenhoff and Daniel Cremers. Lifting vectorial variational problems: A natural formulation based on geometric measure theory and discrete exterior calculus. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Thomas Mollenhoff, Emanuel Laude, Michael Moeller, Jan Lellmann, and Daniel Cremers. Sublabel-accurate relaxation of nonconvex energies. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Davide Moltisanti, Sanja Fidler, and Dima Damen. Action recognition from single timestamp supervision in untrimmed videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Federico Monti, Davide Boscaini, Jonathan Masci, Emanuele Rodola, Jan Svoboda, and Michael M. Bronstein. Geometric deep learning on graphs and manifolds using mixture model cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kwang Moo Yi, Yannick Verdie, Pascal Fua, and Vincent Lepetit. Learning to assign orientations to feature points. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Gyeongsik Moon, Ju Yong Chang, and Kyoung Mu Lee. V2v-posenet: Voxel-to-voxel prediction network for accurate 3d hand and human pose estimation from a single depth map. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Gyeongsik Moon, Ju Yong Chang, and Kyoung Mu Lee. Posefix: Model-agnostic general human pose refinement network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Seyed-Mohsen Moosavi-Dezfooli, Alhussein Fawzi, and Pascal Frossard. Deepfool: A simple and accurate method to fool deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Seyed-Mohsen Moosavi-Dezfooli, Alhussein Fawzi, Omar Fawzi, and Pascal Frossard. Universal adversarial perturbations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Seyed-Mohsen Moosavi-Dezfooli, Alhussein Fawzi, Jonathan Uesato, and Pascal Frossard. Robustness via curvature regularization, and vice versa. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Romero Morais, Vuong Le, Truyen Tran, Budhaditya Saha, Moussa Mansour, and Svetha Venkatesh. Learning regularity in skeleton trajectories for anomaly detection in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Francesc Moreno-Noguer. 3d human pose estimation from a single image via distance matrix regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pedro Morgado and Nuno Vasconcelos. Semantically consistent regularization for zero-shot recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pedro Morgado and Nuno Vasconcelos. Nettare: Tuning the architecture, not just the weights. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dustin Morley and Hassan Foroosh. Improving ransac-based segmentation through cnn encapsulation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Seyed Morteza Safdarnejad and Xiaoming Liu. Spatio-temporal alignment of non-overlapping sequences from independently panning cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Agata Mosinska, Pablo Márquez-Neila, Mateusz Koziński, and Pascal Fua. Beyond the pixel-wise loss for topology-aware delineation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Agata Mosinska-Domanska, Raphael Sznitman, Przemyslaw Glowacki, and Pascal Fua. Active learning for delineation of curvilinear structures. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mohammadreza Mostajabi, Michael Maire, and Gregory Shakhnarovich. Regularizing deep networks by modeling and predicting label structure. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christian Mostegel, Markus Rumpel, Friedrich Fraundorfer, and Horst Bischof. Using self-contradiction to learn confidence measures in stereo vision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Christian Mostegel, Rudolf Prettenthaler, Friedrich Fraundorfer, and Horst Bischof. Scalable surface reconstruction from point clouds with extreme scale and density diversity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Saeid Motiian, Marco Piccirilli, Donald A. Adjeroh, and Gianfranco Doretto. Information bottleneck learning using privileged information for visual recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Roozbeh Mottaghi, Hannaneh Hajishirzi, and Ali Farhadi. A task-oriented approach for cost-sensitive recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Lichao Mou, Yuansheng Hua, and Xiao Xiang Zhu. A relation-augmented fully convolutional network for semantic segmentation in aerial scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Arsalan Mousavian, Dragomir Anguelov, John Flynn, and Jana Kosecka. 3d bounding box estimation using deep learning and geometry. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guodong Mu, Di Huang, Guosheng Hu, Jia Sun, and Yunhong Wang. Led3d: A lightweight and efficient deep approach to recognizing low-quality 3d faces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Franziska Mueller, Florian Bernard, Oleksandr Sotnychenko, Dushyant Mehta, Srinath Sridhar, Dan Casas, and Christian Theobalt. Gnerated hands for real-time 3d hand tracking from monocular rgb. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Matthias Mueller, Neil Smith, and Bernard Ghanem. Context-aware correlation filter tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Lopamudra Mukherjee, Sathya N. Ravi, Jiming Peng, and Vikas Singh. A biresolution spectral framework for product quantization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Arun Mukundan, Giorgos Tolias, and Ondrej Chum. Explicit spatial encoding for deep local descriptors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yusuke Mukuta and Tatsuya Harada. Kernel approximation via empirical orthogonal decomposition for unsupervised feature learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jonghwan Mun, Linjie Yang, Zhou Ren, Ning Xu, and Bohyung Han. Streamlined dense video captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Martin Mundt, Sagnik Majumder, Sreenivas Murali, Panagiotis Panetsos, and Visvanathan Ramesh. Meta-learning convolutional neural architectures for multi-target concrete defect classification with the concrete defect bridge image dataset. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bharti Munjal, Sikandar Amin, Federico Tombari, and Fabio Galasso. Query-guided end-to-end person search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sanjeev Muralikrishnan, Vladimir G. Kim, and Siddhartha Chaudhuri. Tags2parts: Discovering semantic regions from shape tags. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sanjeev Muralikrishnan, Vladimir G. Kim, Matthew Fisher, and Siddhartha Chaudhuri. Shape uni-code: A unified shape representation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Calvin Murdock and Fernando De la Torre. Additive component analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Calvin Murdock, Zhen Li, Howard Zhou, and Tom Duerig. Blockout: Dynamic model selection for hierarchical deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zak Murez, Soheil Kolouri, David Kriegman, Ravi Ramamoorthi, and Kyungnam Kim. Image to image translation for domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Nils Murrugarra-Llerena and Adriana Kovashka. Cross-modality personalization for retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Venkatesh N. Murthy, Vivek Singh, Terrence Chen, R. Manmatha, and Dorin Comaniciu. Deep decision network for multi-class image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Armin Mustafa and Adrian Hilton. Semantically coherent co-segmentation and reconstruction of dynamic scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Armin Mustafa, Hansung Kim, Jean-Yves Guillemaut, and Adrian Hilton. Temporally coherent 4d reconstruction of complex dynamic scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Arsha Nagrani, Samuel Albanie, and Andrew Zisserman. Seeing voices and hearing faces: Cross-modal biometric matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Seungjun Nah, Tae Hyun Kim, and Kyoung Mu Lee. Deep multi-scale convolutional neural network for dynamic scene deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Seungjun Nah, Sanghyun Son, and Kyoung Mu Lee. Recurrent neural networks with intra-frame iterations for video deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mohammad Najafi, Sarah Taghavi Namin, Mathieu Salzmann, and Lars Petersson. Sample and filter: Nonparametric scene parsing via efficient filtering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mahyar Najibi, Mohammad Rastegari, and Larry S. Davis. G-cnn: An iterative grid based object detector. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mahyar Najibi, Bharat Singh, and Larry S. Davis. Fa-rpn: Floating region proposals for face detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Katsuyuki Nakamura, Serena Yeung, Alexandre Alahi, and Li Fei-Fei. Jointly learning energy expenditures and activities using egocentric multimodal signals. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Giljoo Nam, Chenglei Wu, Min H. Kim, and Yaser Sheikh. Strand-accurate multi-view hair capture. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hyeonseob Nam, Jung-Woo Ha, and Jeonghee Kim. Dual attention networks for multimodal reasoning and matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Seonghyeon Nam, Youngbae Hwang, Yasuyuki Matsushita, and Seon Joo Kim. A holistic approach to cross-channel image noise modeling and its application to image denoising. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Pradyumna Narayana, Ross Beveridge, and Bruce A. Draper. Gesture recognition: Focus on the hands. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Behrooz Nasihatkon, Frida Fejne, and Fredrik Kahl. Globally optimal rigid intensity based registration: A fast fourier domain approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jogendra Nath Kundu, Phani Krishna Uppala, Anuj Pahuja, and R. Venkatesh Babu. Adadepth: Unsupervised content congruent adaptation for depth estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- T. Nathan Mundhenk, Daniel Ho, and Barry Y. Chen. Improvements to context based self-supervised learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fabrizio Natola, Valsamis Ntouskos, Fiora Pirri, and Marta Sanzari. Single image object modeling based on brdf and r-surfaces learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Ryota Natsume, Shunsuke Saito, Zeng Huang, Weikai Chen, Chongyang Ma, Hao Li, and Shigeo Morishima. Siclope: Silhouette-based clothed people. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aaron Nech and Ira Kemelmacher-Shlizerman. Level playing field for million scale face recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vladimir Nekrasov, Hao Chen, Chunhua Shen, and Ian Reid. Fast neural architecture search of compact semantic segmentation models via auxiliary cells. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Thomas Nestmeyer and Peter V. Gehler. Reflectance adaptive filtering improves intrinsic image estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Davy Neven, Bert De Brabandere, Marc Proesmans, and Luc Van Gool. Instance segmentation by jointly optimizing spatial embeddings and clustering bandwidth. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Natalia Neverova, James Thewlis, Riza Alp Guler, Iasonas Kokkinos, and Andrea Vedaldi. Slim densepose: Thrifty learning from sparse annotations and motion cues. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Anh Nguyen, Jeff Clune, Yoshua Bengio, Alexey Dosovitskiy, and Jason Yosinski. Plug play generative networks: Conditional iterative generation of images in latent space. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Duy-Kien Nguyen and Takayuki Okatani. Improved fusion of visual and language representations by dense symmetric co-attention for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Duy-Kien Nguyen and Takayuki Okatani. Multi-task learning of hierarchical vision-language representation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rang M. H. Nguyen and Michael S. Brown. Raw image reconstruction using a self-contained srgb-jpeg image with only 64 kb overhead. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chi Nhan Duong, Khoa Luu, Kha Gia Quach, and Tien D. Bui. Longitudinal face modeling via temporal deep restricted boltzmann machines. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Bingbing Ni, Xiaokang Yang, and Shenghua Gao. Progressively parsing interactional objects for fine grained action detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tianwei Ni, Lingxi Xie, Huangjie Zheng, Elliot K. Fishman, and Alan L. Yuille. Elastic boundary projection for 3d medical image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Guang-Yu Nie, Ming-Ming Cheng, Yun Liu, Zhengfa Liang, Deng-Ping Fan, Yue Liu, and Yongtian Wang. Multi-level context ultra-aggregation for stereo matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xuecheng Nie, Jiashi Feng, Yiming Zuo, and Shuicheng Yan. Human pose estimation with parsing induced learner. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Marc Niethammer, Roland Kwitt, and Francois-Xavier Vialard. Metric learning for image registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Yusuke Niitani, Takuya Akiba, Tommi Kerola, Toru Ogawa, Shotaro Sano, and Shuji Suzuki. Sampling techniques for large-scale object detection from sparsely annotated objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Simon Niklaus and Feng Liu. Context-aware synthesis for video frame interpolation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Simon Niklaus, Long Mai, and Feng Liu. Video frame interpolation via adaptive convolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- David Nilsson and Cristian Sminchisescu. Semantic video segmentation by gated recurrent flow propagation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jifeng Ning, Jimei Yang, Shaojie Jiang, Lei Zhang, and Ming-Hsuan Yang. Object tracking via dual linear structured svm and explicit feature map. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chengjie Niu, Jun Li, and Kai Xu. Im2struct: Recovering 3d shape structure from a single rgb image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yulei Niu, Hanwang Zhang, Manli Zhang, Jianhong Zhang, Zhiwu Lu, and Ji-Rong Wen. Recursive visual attention in visual dialog. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhenxing Niu, Mo Zhou, Le Wang, Xinbo Gao, and Gang Hua. Ordinal regression with multiple output cnn for age estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hyeonwoo Noh, Paul Hongsuck Seo, and Bohyung Han. Image question answering using convolutional neural network with dynamic parameter prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hyeonwoo Noh, Taehoon Kim, Jonghwan Mun, and Bohyung Han. Transfer learning via unsupervised task discovery for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Junhyug Noh, Soochan Lee, Beomsu Kim, and Gunhee Kim. Improving occlusion and hard negative handling for single-stage pedestrian detectors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mehdi Noroozi, Ananth Vinjimoor, Paolo Favaro, and Hamed Pirsiavash. Boosting self-supervised learning via knowledge transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sotiris Nousias, Manolis Lourakis, and Christos Bergeles. Large-scale, metric structure from motion for unordered light fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- David Novotny, Diane Larlus, and Andrea Vedaldi. AnchorNet: A weakly supervised network to learn geometry-sensitive features for semantic matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- David Novotny, Samuel Albanie, Diane Larlus, and Andrea Vedaldi. Self-supervised learning of geometrically stable features through probabilistic introspection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Markus Oberweger, Gernot Riegler, Paul Wohlhart, and Vincent Lepetit. Efficiently creating 3d training data for fine hand pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nati Ofir, Meirav Galun, Boaz Nadler, and Ronen Basri. Fast detection of curved edges at low snr. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Seoung Wug Oh, Joon-Young Lee, Ning Xu, and Seon Joo Kim. Fast user-guided video object segmentation by interaction-and-propagation networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Katsunori Ohnishi, Atsushi Kanehira, Asako Kanezaki, and Tatsuya Harada. Recognizing activities of daily living with a wrist-mounted camera. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Eng-Jon Ong and Mirosław Bober. Improved hamming distance search using variable length substrings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Roy Or-El, Rom Hershkovitz, Aaron Wetzler, Guy Rosman, Alfred M. Bruckstein, and Ron Kimmel. Real-time depth refinement for specular objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tribhuvanesh Orekondy, Mario Fritz, and Bernt Schiele. Connecting pixels to privacy and utility: Automatic redaction of private information in images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tribhuvanesh Orekondy, Bernt Schiele, and Mario Fritz. Knockoff nets: Stealing functionality of black-box models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Marin Orsic, Ivan Kreso, Petra Bevandic, and Sinisa Segvic. In defense of pre-trained imagenet architectures for real-time semantic segmentation of road-driving images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kazuki Osawa, Yohei Tsuji, Yuichiro Ueno, Akira Naruse, Rio Yokota, and Satoshi Matsuoka. Large-scale distributed second-order optimization using kronecker-factored approximate curvature for deep convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Magnus Oskarsson, Kenneth Batstone, and Kalle Astrom. Trust no one: Low rank matrix factorization using hierarchical ransac. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ali Osman Ulusoy, Michael J. Black, and Andreas Geiger. Patches, planes and probabilities: A non-local prior for volumetric 3d reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ali Osman Ulusoy, Michael J. Black, and Andreas Geiger. Semantic multi-view stereo: Jointly estimating objects and voxels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Oleksiy Ostapenko, Mihai Puscas, Tassilo Klein, Patrick Jahnichen, and Moin Nabi. Learning to remember: A synaptic plasticity driven framework for continual learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mayu Otani, Yuta Nakashima, Esa Rahtu, and Janne Heikkilä. Rethinking the evaluation of video summaries. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Matthew O’Toole, Felix Heide, David B. Lindell, Kai Zang, Steven Diamond, and Gordon Wetzstein. Reconstructing transient images from single-photon sensors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tycho F.A. van der Ouderaa and Daniel E. Worrall. Reversible gans for memory-efficient image-to-image translation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wanli Ouyang, Xiaogang Wang, Cong Zhang, and Xiaokang Yang. Factors in finetuning deep model for object detection with long-tail distribution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Andrew Owens, Phillip Isola, Josh McDermott, Antonio Torralba, Edward H. Adelson, and William T. Freeman. Visually indicated sounds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Edouard Oyallon. Building a regular decision boundary with deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Poojan Oza and Vishal M. Patel. C2ae: Class conditioned auto-encoder for open-set recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Arghya Pal and Vineeth N. Balasubramanian. Adversarial data programming: Using gans to relax the bottleneck of curated labeled data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Arghya Pal and Vineeth N Balasubramanian. Zero-shot task transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dipankar K. Pal, Felix Juefei-Xu, and Marios Savvides. Discriminative invariant kernel features: A bells-and-whistles-free approach to unsupervised face recognition and pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Sebastian Palacio, Joachim Folz, Jörn Hees, Federico Raue, Damian Borth, and Andreas Dengel. What do deep networks like to see? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tobias Palmer, Kalle Astrom, and Jan-Michael Frahm. The misty three point algorithm for relative pose. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Bowen Pan, Wuwei Lin, Xiaolin Fang, Chaoqin Huang, Bolei Zhou, and Cewu Lu. Recurrent residual module for fast inference in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jinshan Pan, Zhe Hu, Zhixun Su, Hsin-Ying Lee, and Ming-Hsuan Yang. Soft-segmentation guided object motion deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jinshan Pan, Jiangxin Dong, Jimmy S. Ren, Liang Lin, Jinhui Tang, and Ming-Hsuan Yang. Spatially variant linear representation models for joint filtering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Liyuan Pan, Yuchao Dai, Miaomiao Liu, and Fatih Porikli. Simultaneous stereo video deblurring and scene flow estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Rameswar Panda, Amran Bhuiyan, Vittorio Murino, and Amit K. Roy-Chowdhury. Unsupervised adaptive re-identification in open world dynamic camera networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Rohit Pandey, Anastasia Tkach, Shuoran Yang, Pavel Pidlipskyi, Jonathan Taylor, Ricardo Martin-Brualla, Andrea Tagliasacchi, George Papandreou, Philip Davidson, Cem Keskin, Shahram Izadi, and Sean Fanello. Volumetric capture of humans with a single rgbd camera via semi-parametric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bo Pang, Kaiwen Zha, Hanwen Cao, Chen Shi, and Cewu Lu. Deep rnn framework for visual sequential applications. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jiahao Pang, Wenxiu Sun, Chengxi Yang, Jimmy Ren, Ruichao Xiao, Jin Zeng, and Liang Lin. Zoom and learn: Generalizing deep stereo matching to novel domains. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pankaj Pansari and M. Pawan Kumar. Truncated max-of-convex models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Dim P. Papadopoulos, Jasper R. R. Uijlings, Frank Keller, and Vittorio Ferrari. We don't need no bounding-boxes: Training object class detectors using only human verification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Dim P. Papadopoulos, Jasper R. R. Uijlings, Frank Keller, and Vittorio Ferrari. Training object class detectors with click supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Dim P. Papadopoulos, Youssef Tamaazousti, Ferda Ofli, Ingmar Weber, and Antonio Torralba. How to make a pizza: Learning a compositional layer-based gan model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- George Papandreou, Tyler Zhu, Nori Kanazawa, Alexander Toshev, Jonathan Tompson, Chris Bregler, and Kevin Murphy. Towards accurate multi-person pose estimation in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Konstantinos Papoutsakis, Costas Panagiotakis, and Antonis A. Argyros. Temporal action co-segmentation in 3d motion capture data and videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shaifali Parashar, Daniel Pizarro, and Adrien Bartoli. Isometric non-rigid shape-from-motion in linear time. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jaesik Park, Yu-Wing Tai, Sudipta N. Sinha, and In So Kweon. Efficient and robust color consistency for community photo collections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jeong Joon Park, Peter Florence, Julian Straub, Richard Newcombe, and Steven Lovegrove. Deepsdf: Learning continuous signed distance functions for shape representation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jongchan Park, Joon-Young Lee, Donggeun Yoo, and In So Kweon. Distort-and-recover: Color enhancement using deep reinforcement learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Paritosh Parmar and Brendan Tran Morris. What and how well you performed? a multitask learning approach to action quality assessment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Despoina Paschalidou, Osman Ulusoy, Carolin Schmitt, Luc Van Gool, and Andreas Geiger. Raynet: Learning volumetric 3d reconstruction with ray potentials. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Despoina Paschalidou, Ali Osman Ulusoy, and Andreas Geiger. Superquadrics revisited: Learning 3d shape parsing beyond cuboids. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Geoffrey Pascoe, Will Maddern, Michael Tanner, Pedro Pinies, and Paul Newman. Nid-slam: Robust monocular slam using normalised information distance. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Deepak Pathak, Philipp Krahenbuhl, Jeff Donahue, Trevor Darrell, and Alexei A. Efros. Context encoders: Feature learning by inpainting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Deepak Pathak, Ross Girshick, Piotr Dollar, Trevor Darrell, and Bharath Hariharan. Learning features by watching objects move. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Giorgio Patrini, Alessandro Rozza, Aditya Krishna Menon, Richard Nock, and Lizhen Qu. Making deep neural networks robust to label noise: A loss correction approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Badri Patro and Vinay P. Namboodiri. Differential attention for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Akanksha Paul, Narayanan C. Krishnan, and Prateek Munjal. Semantically aligned bias reducing zero shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mrinal K. Paul and Stergios I. Roumeliotis. Alternating-stereo vins: Observability analysis and performance evaluation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sujoy Paul, Jawadul H. Bappy, and Amit K. Roy-Chowdhury. Non-uniform subset selection for active learning in structured data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Georgios Pavlakos, Xiaowei Zhou, Konstantinos G. Derpanis, and Kostas Daniilidis. Harvesting multiple views for marker-less 3d human pose annotations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Georgios Pavlakos, Luyang Zhu, Xiaowei Zhou, and Kostas Daniilidis. Learning to estimate 3d human pose and shape from a single color image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Georgios Pavlakos, Vasileios Choutas, Nima Ghorbani, Timo Bolkart, Ahmed A. A. Osman, Dimitrios Tzionas, and Michael J. Black. Expressive body capture: 3d hands, face, and body from a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dario Pavllo, Christoph Feichtenhofer, David Grangier, and Michael Auli. 3d human pose estimation in video with temporal convolutions and semi-supervised training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wenjie Pei, Tadas Baltrusaitis, David M.J. Tax, and Louis-Philippe Morency. Temporal attention-gated model for robust sequence classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Wenjie Pei, Jiyuan Zhang, Xiangrong Wang, Lei Ke, Xiaoyong Shen, and Yu-Wing Tai. Memory-attended recurrent network for video captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tomer Peleg, Pablo Szekely, Doron Sabo, and Omry Sendik. Im-net for high resolution video frame interpolation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chong Peng, Zhao Kang, and Qiang Cheng. Subspace clustering via variance regularized ridge regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guozhu Peng and Shangfei Wang. Weakly supervised facial action unit recognition through adversarial training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Peixi Peng, Tao Xiang, Yaowei Wang, Massimiliano Pontil, Shaogang Gong, Tiejun Huang, and Yonghong Tian. Unsupervised cross-dataset transfer learning for person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Sida Peng, Yuan Liu, Qixing Huang, Xiaowei Zhou, and Hujun Bao. Pvnet: Pixel-wise voting network for 6dof pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Federico Perazzi, Jordi Pont-Tuset, Brian McWilliams, Luc Van Gool, Markus Gross, and Alexander Sorkine-Hornung. A benchmark dataset and evaluation methodology for video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Federico Perazzi, Anna Khoreva, Rodrigo Benenson, Bernt Schiele, and Alexander Sorkine-Hornung. Learning video object segmentation from static images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pramuditha Perera, Ramesh Nallapati, and Bing Xiang. Ocgan: One-class novelty detection using gans with constrained latent representations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Eduardo Perez-Pellitero, Jordi Salvador, Javier Ruiz-Hidalgo, and Bodo Rosenhahn. Psycho: Manifold span reduction for super resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Juan-Manuel Perez-Rua, Tomas Crivelli, Patrick Bouthemy, and Patrick Perez. Determining occlusions from space and time image reconstructions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Juan-Manuel Perez-Rua, Valentin Vielzeuf, Stephane Pateux, Moez Baccouche, and Frederic Jurie. Mfas: Multimodal fusion architecture search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Federico Pernici, Federico Bartoli, Matteo Bruni, and Alberto Del Bimbo. Memory based online learning of deep representations from video streams. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Toby Perrett and Dima Damen. Ddlstm: Dual-domain lstm for cross-dataset action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Quang-Hieu Pham, Thanh Nguyen, Binh-Son Hua, Gemma Roig, and Sai-Kit Yeung. Jsis3d: Joint semantic-instance segmentation of 3d point clouds with multi-task pointwise networks and multi-value conditional random fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Trung T. Pham, Seyed Hamid Rezatofighi, Ian Reid, and Tat-Jun Chin. Efficient point process inference for large-scale object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jonah Philion. Fastdraw: Addressing the long tail of lane detection by adapting a sequential prediction network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xinglin Piao, Yongli Hu, Junbin Gao, Yanfeng Sun, and Baocai Yin. Double nuclear norm based low rank representation on grassmann manifolds for clustering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- AJ Piergiovanni and Michael S. Ryoo. Learning latent super-events to detect multiple activities in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- AJ Piergiovanni and Michael S. Ryoo. Representation flow for action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Andrea Pilzer, Stephane Lathuiliere, Nicu Sebe, and Elisa Ricci. Refine and distill: Exploiting cycle-inconsistency and knowledge distillation for unsupervised monocular depth estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Pedro O. Pinheiro. Unsupervised domain adaptation with similarity learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Marcel Pietraschke and Volker Blanz. Automated 3d face reconstruction from multiple images using quality measures. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Aleksis Pirinen and Cristian Sminchisescu. Deep reinforcement learning of region proposal networks for object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Leonid Pishchulin, Eldar Insafutdinov, Siyu Tang, Bjoern Andres, Mykhaylo Andriluka, Peter V. Gehler, and Bernt Schiele. Deepcut: Joint subset partition and labeling for multi person pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Francesco Pittaluga, Sanjeev J. Koppal, Sing Bing Kang, and Sudipta N. Sinha. Revealing scenes by inverting structure from motion reconstructions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tobias Plotz and Stefan Roth. Benchmarking denoising algorithms with real photographs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Stylianos Ploumpis, Haoyang Wang, Nick Pears, William A. P. Smith, and Stefanos Zafeiriou. Combining 3d morphable models: A large scale face-and-head model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bryan A. Plummer, Matthew Brown, and Svetlana Lazebnik. Enhancing video summarization via vision-language embedding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Matteo Poggi and Stefano Mattoccia. Learning to predict stereo reliability enforcing local consistency of confidence maps. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Matteo Poggi, Davide Pallotti, Fabio Tosi, and Stefano Mattoccia. Guided stereo matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tobias Pohlen, Alexander Hermans, Markus Mathias, and Bastian Leibe. Full-resolution residual networks for semantic segmentation in street scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Georg Poier, David Schinagl, and Horst Bischof. Learning pose specific representations by predicting different views. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Alex Poms, Chenglei Wu, Shou-I Yu, and Yaser Sheikh. Learning patch reconstructability for accelerating multi-view stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Alin-Ionut Popa, Mihai Zanfir, and Cristian Sminchisescu. Deep multitask architecture for integrated 2d and 3d human sensing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Phillip E. Pope, Soheil Kolouri, Mohammad Rostami, Charles E. Martin, and Heiko Hoffmann. Explainability methods for graph convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Lorenzo Porzi, Samuel Rota Buló, Aleksander Colovic, and Peter Kotschieder. Seamless scene segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rafael Possas, Sheila Pinto Caceres, and Fabio Ramos. Egocentric activity recognition on a budget. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Omid Poursaeed, Isay Katsman, Bicheng Gao, and Serge Belongie. Generative adversarial perturbations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Arik Poznanski and Lior Wolf. Cnn-n-gram for handwriting word recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Aaditya Prakash, Nick Moran, Solomon Garber, Antonella DiLillo, and James Storer. Deflecting adversarial attacks with pixel deflection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Aaditya Prakash, James Storer, Dinei Florencio, and Cha Zhang. Repr: Improved training of convolutional filters. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- R. T. Pramod and S. P. Arun. Do computational models differ systematically from human object perception? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ekta Prashnani, Hong Cai, Yasamin Mostofi, and Pradeep Sen. Pieapp: Perceptual image-error assessment through pairwise preference. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- True Price, Johannes L. Schönberger, Zhen Wei, Marc Pollefeys, and Jan-Michael Frahm. Augmenting crowd-sourced 3d reconstructions using semantic detections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- James Pritts, Zuzana Kukelova, Viktor Larsson, and Ondřej Chum. Radially-distorted conjugate translations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Thomas Probst, Danda Pani Paudel, Ajad Chhatkuli, and Luc Van Gool. Unsupervised learning of consensus maximization for 3d vision problems. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hugo Proenca and Joao C. Neves. Irina: Iris recognition (even) in inaccurately segmented data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Junfu Pu, Wengang Zhou, and Houqiang Li. Iterative alignment network for continuous sign language recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xavier Puig, Kevin Ra, Marko Boben, Jiaman Li, Tingwu Wang, Sanja Fidler, and Antonio Torralba. Virtualhome: Simulating household activities via programs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Albert Pumarola, Antonio Agudo, Lorenzo Porzi, Alberto Sanfeliu, Vincent Lepetit, and Francesc Moreno-Noguer. Geometry-aware network for non-rigid shape prediction from a single view. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Abhijith Punnappurath and Michael S. Brown. Reflection removal using a dual-pixel sensor. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kuldeep Purohit, Anshul Shah, and A. N. Rajagopalan. Bringing alive blurred moments. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Gilles Puy and Patrick Perez. A flexible convolutional solver for fast style transfers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Charles R. Qi, Hao Su, Kaichun Mo, and Leonidas J. Guibas. Pointnet: Deep learning on point sets for 3d classification and segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guo-Jun Qi. Hierarchically gated deep networks for semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Lu Qi, Li Jiang, Shu Liu, Xiaoyong Shen, and Jiaya Jia. Amodal instance segmentation with kins dataset. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Xiaojuan Qi, Renjie Liao, Zhengzhe Liu, Raquel Urtasun, and Jiaya Jia. Geonet: Geometric neural network for joint depth and surface normal estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rui Qian, Robby T. Tan, Wenhan Yang, Jiajun Su, and Jiaying Liu. Attentive generative adversarial network for raindrop removal from a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yanlin Qian, Joni-Kristian Kamarainen, Jarno Nikkanen, and Jiri Matas. On finding gray pixels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yiming Qian, Minglun Gong, and Yee Hong Yang. 3d reconstruction of transparent objects with position-normal consistency. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yiming Qian, Minglun Gong, and Yee-Hong Yang. Stereo-based 3d reconstruction of dynamic fluid surfaces by global optimization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ruizhi Qiao, Lingqiao Liu, Chunhua Shen, and Anton van den Hengel. Less is more: Zero-shot learning from online textual documents with noise suppression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Siyuan Qiao, Chenxi Liu, Wei Shen, and Alan L. Yuille. Few-shot image recognition by predicting parameters from activations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Siyuan Qiao, Zhe Lin, Jianming Zhang, and Alan L. Yuille. Neural rejuvenation: Improving deep network training by enhancing computational resource utilization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hongwei Qin, Junjie Yan, Xiu Li, and Xiaolin Hu. Joint training of cascaded cnn for face detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jie Qin, Li Liu, Ling Shao, Bingbing Ni, Chen Chen, Fumin Shen, and Yunhong Wang. Binary coding for partial action analysis with limited observation ratios. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Xuebin Qin, Zichen Zhang, Chenyang Huang, Chao Gao, Masood Dehghan, and Martin Jagersand. Basnet: Boundary-aware salient object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jiaxiong Qiu, Zhaopeng Cui, Yinda Zhang, Xingdi Zhang, Shuaicheng Liu, Bing Zeng, and Marc Pollefeys. Deeplidar: Deep surface normal guided depth prediction for outdoor scene from sparse lidar data and single color image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhaofan Qiu, Ting Yao, and Tao Mei. Deep quantization: Encoding convolutional activations with deep generative model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Liangqiong Qu, Jiandong Tian, Shengfeng He, Yandong Tang, and Rynson W. H. Lau. Deshadownet: A multi-context embedding deep network for shadow removal. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yanyun Qu, Yizi Chen, Jingying Huang, and Yuan Xie. Enhanced pix2pix dehazing network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ying Qu, Hairong Qi, and Chiman Kwan. Unsupervised sparse dirichlet-net for hyperspectral image super-resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Novi Quadrianto, Viktoriia Sharmanska, and Oliver Thomas. Discovering fair representations in the data domain. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yuhui Quan, Chenglong Bao, and Hui Ji. Equiangular kernel dictionary learning with applications to dynamic texture analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ha Quang Minh, Marco San Biagio, Loris Bazzani, and Vittorio Murino. Approximate log-hilbertschmidt distances between covariance operators for image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yvain Queau, Roberto Mecca, and Jean-Denis Durou. Unbiased photometric stereo for colored surfaces: A variational approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yvain Queau, Tao Wu, Francois Lauze, Jean-Denis Durou, and Daniel Cremers. A non-convex variational approach to photometric stereo under inaccurate lighting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Thi Quynh Nhi Tran, Herve Le Borgne, and Michel Crucianu. Aggregating image and text quantized correlated components. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yaadhav Raaj, Haroon Idrees, Gines Hidalgo, and Yaser Sheikh. Efficient online multi-person 2d pose tracking with recurrent spatio-temporal affinity fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mahdi Rad, Markus Oberweger, and Vincent Lepetit. Feature mapping for learning fast and accurate 3d pose inference from synthetic images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Filip Radenovic, Johannes L. Schonberger, Dinghuang Ji, Jan-Michael Frahm, Ondrej Chum, and Jiri Matas. From dusk till dawn: Modeling in the dark. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ilija Radosavovic, Piotr Dollár, Ross Girshick, Georgia Gkioxari, and Kaiming He. Data distillation: Towards omni-supervised learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Edward Raff, Jared Sylvester, Steven Forsyth, and Mark McLean. Barrage of random transforms for adversarially robust defense. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Amir M. Rahimi, Raphael Ruschel, and B.S. Manjunath. Uav sensor fusion with latent-dynamic conditional random fields in coronal plane estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hossein Rahmani and Ajmal Mian. 3d action recognition from novel viewpoints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jathushan Rajasegaran, Vinoj Jayasundara, Sandaru Jayasekara, Hirunima Jayasekara, Suranga Seneviratne, and Ranga Rodrigo. Deepcaps: Going deeper with capsule networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Santhosh K. Ramakrishnan, Ambar Pal, Gaurav Sharma, and Anurag Mittal. An empirical evaluation of visual question answering for novel objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vignesh Ramanathan, Jonathan Huang, Sami Abu-El-Haija, Alexander Gorban, Kevin Murphy, and Li Fei-Fei. Detecting events and key actors in multi-person videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Vasili Ramanishka, Abir Das, Jianming Zhang, and Kate Saenko. Top-down visual saliency guided by captions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vasili Ramanishka, Yi-Ting Chen, Teruhisa Misu, and Kate Saenko. Toward driving scene understanding: A dataset for learning driver behavior and causal reasoning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rene Ranftl, Vibhav Vineet, Qifeng Chen, and Vladlen Koltun. Dense monocular depth estimation in complex dynamic scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Anurag Ranjan and Michael J. Black. Optical flow estimation using a spatial pyramid network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anurag Ranjan, Varun Jampani, Lukas Balles, Kihwan Kim, Deqing Sun, Jonas Wulff, and Michael J. Black. Competitive collaboration: Joint unsupervised learning of depth, camera motion, optical flow and motion segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yongming Rao, Dahua Lin, Jiwen Lu, and Jie Zhou. Learning globally optimized object detector via policy gradient. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yongming Rao, Jiwen Lu, and Jie Zhou. Spherical fractal convolutional neural networks for point cloud recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Koteswar Rao Jerripothula, Jianfei Cai, Jiangbo Lu, and Junsong Yuan. Object co-skeletonization with co-segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Carolina Raposo and Joao P. Barreto. Theory and practice of structure-from-motion using affine correspondences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Carolina Raposo and João P. Barreto. 3d registration of curves and surfaces using local differential information. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Maheen Rashid, Xiuye Gu, and Yong Jae Lee. Interspecies knowledge transfer for facial keypoint detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Sarah Rastegar, Mahdieh Soleymani, Hamid R. Rabiee, and Seyed Mohsen Shojaee. Mdl-cw: A multimodal deep learning framework with cross weights. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hareesh Ravi, Lezi Wang, Carlos Muniz, Leonid Sigal, Dimitris Metaxas, and Mubbasir Kapadia. Show me a story: Towards coherent neural story illustration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sathya N. Ravi, Yunyang Xiong, Lopamudra Mukherjee, and Vikas Singh. Filter flow made practical: Massively parallel and lock-free. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Swarna K. Ravindran and Anurag Mittal. Comal: Good features to match on object boundaries. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Esteban Real, Jonathon Shlens, Stefano Mazzocchi, Xin Pan, and Vincent Vanhoucke. Youtube-boundingboxes: A large high-precision human-annotated data set for object detection in video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Henri Rebecq, Rene Ranftl, Vladlen Koltun, and Davide Scaramuzza. Events-to-video: Bringing modern computer vision to event cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Sylvestre-Alvise Rebuffi, Alexander Kolesnikov, Georg Sperl, and Christoph H. Lampert. icarl: Incremental classifier and representation learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Sylvestre-Alvise Rebuffi, Hakan Bilen, and Andrea Vedaldi. Efficient parametrization of multi-domain deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- N. Dinesh Reddy, Minh Vo, and Srinivasa G. Narasimhan. Occlusion-net: 2d/3d occluded keypoint localization using graph networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Konda Reddy Mopuri, Utkarsh Ojha, Utsav Garg, and R. Venkatesh Babu. Nag: Network for adversary generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Joseph Redmon and Ali Farhadi. Yolo9000: Better, faster, stronger. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Joseph Redmon, Santosh Divvala, Ross Girshick, and Ali Farhadi. You only look once: Unified, real-time object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Scott Reed, Zeynep Akata, Honglak Lee, and Bernt Schiele. Learning deep representations of fine-grained visual descriptions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Krishna Regmi and Ali Borji. Cross-view image synthesis using conditional gans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Konstantinos Rematas, Tobias Ritschel, Mario Fritz, Efstratios Gavves, and Tinne Tuytelaars. Deep reflectance maps. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Konstantinos Rematas, Ira Kemelmacher-Shlizerman, Brian Curless, and Steve Seitz. Soccer on your tabletop. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Dongwei Ren, Wangmeng Zuo, Qinghua Hu, Pengfei Zhu, and Deyu Meng. Progressive image deraining networks: A better and simpler baseline. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhile Ren and Erik B. Sudderth. Three-dimensional object detection and layout prediction using clouds of oriented gradients. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zhongzheng Ren and Yong Jae Lee. Cross-domain self-supervised multi-task feature learning using synthetic imagery. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zhou Ren, Xiaoyu Wang, Ning Zhang, Xutao Lv, and Li-Jia Li. Deep reinforcement learning-based image captioning with embedding reward. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vijay Rengarajan, Ambasadram N. Rajagopalan, and Rangarajan Aravind. From bows to arrows: Rolling shutter rectification of urban scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Vijay Rengarajan, Yogesh Balaji, and A. N. Rajagopalan. Unrolling the shutter: Cnn to correct motion distortions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Steven J. Rennie, Etienne Marcheret, Youssef Mroueh, Jerret Ross, and Vaibhava Goel. Self-critical sequence training for image captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- George Retsinas, Georgios Louloudis, Nikolaos Stamatopoulos, Giorgos Sfikas, and Basilis Gatos. An alternative deep feature approach to line level keyword spotting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jerome Revaud, Minhyeok Heo, Rafael S. Rezende, Chanmi You, and Seong-Gyun Jeong. Did it change? learning to detect point-of-interest changes for proactive map updates. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Morteza Rezanejad, Gabriel Downs, John Wilder, Dirk B. Walther, Allan Jepson, Sven Dickinson, and Kaleem Siddiqi. Scene categorization from contours: Medial axis based salience measures. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hamid Rezatofighi, Nathan Tsoi, JunYoung Gwak, Amir Sadeghian, Ian Reid, and Silvio Savarese. Generalized intersection over union: A metric and a loss for bounding box regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rafael S. Rezende, Joaquin Zepeda, Jean Ponce, Francis Bach, and Patrick Perez. Kernel square-loss exemplar machines for image retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Nicholas Rhinehart and Kris M. Kitani. Learning action maps of large environments via first-person vision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Helge Rhodin, Jörg Spörri, Isinsu Katircioglu, Victor Constantin, Frédéric Meyer, Erich Müller, Mathieu Salzmann, and Pascal Fua. Learning monocular 3d human pose estimation from multi-view images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Helge Rhodin, Victor Constantin, Isinsu Katircioglu, Mathieu Salzmann, and Pascal Fua. Neural scene decomposition for multi-person motion capture. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Umar Riaz Muhammad, Yongxin Yang, Yi-Zhe Song, Tao Xiang, and Timothy M. Hospedales. Learning deep sketch abstraction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Javier Ribera, David Guera, Yuhao Chen, and Edward J. Delp. Locating objects without bounding boxes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Alexander Richard and Juergen Gall. Temporal action detection using a statistical language model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Alexander Richard, Hilde Kuehne, and Juergen Gall. Weakly supervised action learning with rnn based fine-to-coarse modeling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alexander Richard, Hilde Kuehne, and Juergen Gall. Action sets: Weakly supervised action segmentation without ordering constraints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Elad Richardson, Matan Sela, Roy Or-El, and Ron Kimmel. Learning detailed face reconstruction from a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Stephan R. Richter and Stefan Roth. Matryoshka networks: Predicting 3d geometry via nested shape layers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Gernot Riegler, Ali Osman Ulusoy, and Andreas Geiger. Octnet: Learning deep 3d representations at high resolutions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gernot Riegler, Yiyi Liao, Simon Donne, Vladlen Koltun, and Andreas Geiger. Connecting the dots: Learning representations for active monocular depth estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ergys Ristani and Carlo Tomasi. Features for multi-target multi-camera tracking and re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Daniel Ritchie, Kai Wang, and Yu-An Lin. Fast and flexible indoor scene synthesis via deep convolutional generative models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Cesar Roberto de Souza, Adrien Gaidon, Yohann Cabon, and Antonio Manuel Lopez. Procedural generation of videos to train deep action recognition networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Caleb Robinson, Le Hou, Kolya Malkin, Rachel Soobitsky, Jacob Czawlytko, Bistra Dilkina, and Nebojsa Jojic. Large scale high-resolution land cover mapping with multi-resolution data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ignacio Rocco, Relja Arandjelovic, and Josef Sivic. Convolutional neural network architecture for geometric matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ignacio Rocco, Relja Arandjelović, and Josef Sivic. End-to-end weakly-supervised semantic alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mrigank Rochan and Yang Wang. Video summarization by learning from unpaired data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Gregory Rogez, Philippe Weinzaepfel, and Cordelia Schmid. Lcr-net: Localization-classification-regression for human pose. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anna Rohrbach, Marcus Rohrbach, Siyu Tang, Seong Joon Oh, and Bernt Schiele. Generating descriptions with grounded and co-referenced people. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Michal Rolínek, Dominik Zietlow, and Georg Martius. Variational autoencoders pursue pca directions (by accident). In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Xuejian Rong, Chucai Yi, and Yingli Tian. Unambiguous text localization and retrieval for cluttered scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jerome Rony, Luiz G. Hafemann, Luiz S. Oliveira, Ismail Ben Ayed, Robert Sabourin, and Eric Granger. Decoupling direction and norm for efficient gradient-based l2 adversarial attacks and defenses. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- German Ros, Laura Sellart, Joanna Materzynska, David Vazquez, and Antonio M. Lopez. The synthia dataset: A large collection of synthetic images for semantic segmentation of urban scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Guy Rosman, Daniela Rus, and John W. Fisher, III. Information-driven adaptive structured-light scanners. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Samuel Rota Buló and Peter Kotschieder. Online learning with bayesian classification trees. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Samuel Rota Buló, Gerhard Neuhold, and Peter Kotschieder. Loss max-pooling for semantic image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Joseph Roth, Yiyi Tong, and Xiaoming Liu. Adaptive 3d face reconstruction from unconstrained photo collections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Rasmus Rothe, Radu Timofte, and Luc Van Gool. Some like it hot - visual guidance for preference prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tamar Rott Shaham and Tomer Michaeli. Deformation aware image compression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Riccardo Roveri, Lukas Rahmann, Cengiz Oztireli, and Markus Gross. A network architecture for point cloud classification via automatic depth images generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Anirban Roy and Sinisa Todorovic. Monocular depth estimation using neural regression forest. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Anirban Roy and Sinisa Todorovic. Combining bottom-up, top-down, and smoothness cues for weakly supervised image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Proteek Chandan Roy and Vishnu Naresh Boddeti. Mitigating information leakage in image representations: A maximum entropy approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aruni RoyChowdhury, Prithvijit Chakrabarty, Ashish Singh, SouYoung Jin, Huaizu Jiang, Lian-gliang Cao, and Erik Learned-Miller. Automatic adaptation of object detectors to new domains using self-training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Loic A. Royer, David L. Richmond, Carsten Rother, Bjoern Andres, and Dagmar Kainmueller. Convexity shape constraints for image segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Artem Rozantsev, Sudipta N. Sinha, Debadepta Dey, and Pascal Fua. Flight dynamics-based recovery of a uav trajectory using ground cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Artem Rozantsev, Mathieu Salzmann, and Pascal Fua. Residual parameter transfer for deep domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Denys Rozumnyi, Jan Kotera, Filip Sroubek, Lukas Novotny, and Jiri Matas. The world of fast moving objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tom F. H. Runia, Cees G. M. Snoek, and Arnold W. M. Smeulders. Real-world repetition estimation by div, grad and curl. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christian Rupprecht, Iro Laina, Nassir Navab, Gregory D. Hager, and Federico Tombari. Guide me: Interacting with deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Paolo Russo, Fabio M. Carlucci, Tatiana Tommasi, and Barbara Caputo. From source to target and back: Symmetric bi-directional adaptive gan. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Sean Ryan Fanello, Christoph Rhemann, Vladimir Tankovich, Adarsh Kowdle, Sergio Orts Escolano, David Kim, and Shahram Izadi. Hyperdepth: Learning depth from structured light without matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Sean Ryan Fanello, Julien Valentin, Christoph Rhemann, Adarsh Kowdle, Vladimir Tankovich, Philip Davidson, and Shahram Izadi. Ultrastereo: Efficient learning-based matching for active stereo systems. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mohammad Sabokrou, Mohammad Khalooei, Mahmood Fathy, and Ehsan Adeli. Adversarially learned one-class classifier for novelty detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fereshteh Sadeghi, Alexander Toshev, Eric Jang, and Sergey Levine. Sim2real viewpoint invariant visual servoing by recurrent control. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Amir Sadeghian, Vineet Kosaraju, Ali Sadeghian, Noriaki Hirose, Hamid Rezaatofghi, and Silvio Savarese. Sophie: An attentive gan for predicting paths compliant to social and physical constraints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Faraz Saeedan, Nicolas Weber, Michael Goesele, and Stefan Roth. Detail-preserving pooling in deep networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ryusuke Sagawa and Yutaka Satoh. Illuminant-camera communication to observe moving objects under strong external light by spread spectrum modulation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alexander Sage, Eirikur Agustsson, Radu Timofte, and Luc Van Gool. Logo synthesis and manipulation with clustered generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Christos Sagonas, Yannis Panagakis, Alina Leidinger, and Stefanos Zafeiriou. Robust joint and individual variance explained. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Min-cheol Sagong, Yong-goo Shin, Seung-wook Kim, Seung Park, and Sung-jea Ko. Pepsi : Fast image inpainting with parallel decoding network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kuniaki Saito, Kohei Watanabe, Yoshitaka Ushiku, and Tatsuya Harada. Maximum classifier discrepancy for unsupervised domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kuniaki Saito, Yoshitaka Ushiku, Tatsuya Harada, and Kate Saenko. Strong-weak distribution alignment for adaptive object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Shunsuke Saito, Lingyu Wei, Liwen Hu, Koki Nagano, and Hao Li. Photorealistic facial texture inference using deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mehdi S. M. Sajjadi, Raviteja Vemulapalli, and Matthew Brown. Frame-recurrent video super-resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Naoki Sakakibara, Fumihiko Sakaue, and Jun Sato. Seeing temporal modulation of lights from standard cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Amaia Salvador, Nicholas Hynes, Yusuf Aytar, Javier Marin, Ferda Ofli, Ingmar Weber, and Antonio Torralba. Learning cross-modal embeddings for cooking recipes and food images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amaia Salvador, Michal Drozdal, Xavier Giro-i Nieto, and Adriana Romero. Inverse cooking: Recipe generation from food images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Artsiom Sanakoyeu, Vadim Tschernezki, Uta Buchler, and Bjorn Ommer. Divide and conquer the embedding space for metric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Luis G. Sanchez Giraldo, Erion Hasanbelliu, Murali Rao, and Jose C. Principe. Group-wise point-set registration based on renyi’s second order entropy. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tushar Sandhan and Jin Young Choi. Anti-glare: Tightly constrained optimization for eyeglass reflection removal. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mark Sandler, Andrew Howard, Menglong Zhu, Andrey Zhmoginov, and Liang-Chieh Chen. Mobilenetv2: Inverted residuals and linear bottlenecks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Patsorn Sangkloy, Jingwan Lu, Chen Fang, Fisher Yu, and James Hays. Scribbler: Controlling deep image synthesis with sketch and color. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Swami Sankaranarayanan, Yogesh Balaji, Arpit Jain, Ser Nam Lim, and Rama Chellappa. Learning from synthetic data: Addressing domain shift for semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rodrigo Santa Cruz, Basura Fernando, Anoop Cherian, and Stephen Gould. Deeppermnet: Visual permutation learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Venkataraman Santhanam, Vlad I. Morariu, and Larry S. Davis. Generalized deep image to image regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Soubhik Sanyal, Timo Bolkart, Haiwen Feng, and Michael J. Black. Learning to regress 3d face shape and expression from an image without 3d supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- M. Saquib Sarfraz, Arne Schumann, Andreas Eberle, and Rainer Stiefelhagen. A pose-sensitive embedding for person re-identification with expanded cross neighborhood re-ranking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Saquib Sarfraz, Vivek Sharma, and Rainer Stiefelhagen. Efficient parameter-free clustering using first neighbor relations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Mert Bulent Sariyildiz and Ramazan Gokberk Cinbis. Gradient matching generative networks for zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Paul-Edouard Sarlin, Cesar Cadena, Roland Siegwart, and Marcin Dymczyk. From coarse to fine: Robust hierarchical localization at large scale. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Muhammad Sarmad, Hyunjoo Jenny Lee, and Young Min Kim. Rl-gan-net: A reinforcement learning agent controlled gan network for real-time point cloud shape completion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Kazuma Sasaki, Satoshi Iizuka, Edgar Simo-Serra, and Hiroshi Ishikawa. Joint gap detection and inpainting of line drawings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Torsten Sattler, Michal Havlena, Konrad Schindler, and Marc Pollefeys. Large-scale location recognition and the geometric burstiness problem. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Torsten Sattler, Akihiko Torii, Josef Sivic, Marc Pollefeys, Hajime Taira, Masatoshi Okutomi, and Tomas Pajdla. Are large-scale 3d models really necessary for accurate visual localization? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Torsten Sattler, Will Maddern, Carl Toft, Akihiko Torii, Lars Hammarstrand, Erik Stenborg, Daniel Safari, Masatoshi Okutomi, Marc Pollefeys, Josef Sivic, Fredrik Kahl, and Tomas Pajdla. Benchmarking 6dof outdoor visual localization in changing conditions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Torsten Sattler, Qunjie Zhou, Marc Pollefeys, and Laura Leal-Taixe. Understanding the limitations of cnn-based absolute camera pose regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Olivier Saurer, Marc Pollefeys, and Gim Hee Lee. Sparse to dense 3d reconstruction from rolling shutter images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nikolay Savinov, Christian Hane, Lubor Ladicky, and Marc Pollefeys. Semantic 3d reconstruction with continuous regularization and ray potentials using a visibility consistency constraint. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nikolay Savinov, Akihito Seki, Lubor Ladicky, Torsten Sattler, and Marc Pollefeys. Quad-networks: Unsupervised learning to rank for interest point detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Johann Sawatzky, Abhilash Srikantha, and Juergen Gall. Weakly supervised affordance detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Johann Sawatzky, Yaser Souri, Christian Grund, and Jurgen Gall. What object should i use? - task driven object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ian Schillebeeckx and Robert Pless. Single image camera calibration with lenticular arrays for augmented reality. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hendrik Schilling, Maximilian Diebold, Carsten Rother, and Bernd Jähne. Trust your model: Light field depth estimation with inline occlusion handling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Michael Schober, Amit Adam, Omer Yair, Shai Mazor, and Sebastian Nowozin. Dynamic time-of-flight. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Johannes L. Schonberger and Jan-Michael Frahm. Structure-from-motion revisited. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Johannes L. Schonberger, Hans Hardmeier, Torsten Sattler, and Marc Pollefeys. Comparative evaluation of hand-crafted and learned local features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Edgar Schonfeld, Sayna Ebrahimi, Samarth Sinha, Trevor Darrell, and Zeynep Akata. Generalized zero- and few-shot learning via aligned variational autoencoders. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Thomas Schops, Johannes L. Schonberger, Silvano Galliani, Torsten Sattler, Konrad Schindler, Marc Pollefeys, and Andreas Geiger. A multi-view stereo benchmark with high-resolution images and multi-camera videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Thomas Schops, Torsten Sattler, and Marc Pollefeys. Bad slam: Bundle adjusted direct rgb-d slam. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Samuel Schulter, Paul Vernaza, Wongun Choi, and Manmohan Chandraker. Deep network flow for multi-object tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Rene Schuster, Oliver Wasenmuller, Christian Unger, and Didier Stricker. Sdc - stacked dilated convolution: A unified descriptor network for dense matching tasks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tal Schuster, Lior Wolf, and David Gadot. Optical flow requires multiple strategies (but only one network). In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Idan Schwartz, Seunghak Yu, Tamir Hazan, and Alexander G. Schwing. Factor graph attention. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Guillaume Seguin, Piotr Bojanowski, Remi Lajugie, and Ivan Laptev. Instance-level video segmentation from object tracks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Akihito Seki and Marc Pollefeys. Sgm-nets: Semi-global matching with neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Taiki Sekii. Robust, real-time 3d tracking of multiple objects with similar appearances. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yusuke Sekikawa, Kosuke Hara, and Hideo Saito. Eventnet: Asynchronous recursive event processing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Fadime Sener and Angela Yao. Unsupervised learning and segmentation of complex activities from video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Soumyadip Sengupta, Tal Amir, Meirav Galun, Tom Goldstein, David W. Jacobs, Amit Singer, and Ronen Basri. A new rank constraint on multi-view fundamental matrices, and its application to camera location recovery. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Soumyadip Sengupta, Angjoo Kanazawa, Carlos D. Castillo, and David W. Jacobs. Sfsnet: Learning shape, reflectance and illuminance of faces ‘in the wild’. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Arda Senocak, Tae-Hyun Oh, Junsik Kim, Ming-Hsuan Yang, and In So Kweon. Learning to localize sound source in visual scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Seonguk Seo, Paul Hongsuck Seo, and Bohyung Han. Learning for single-shot confidence calibration in deep neural networks through stochastic inferences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Laura Sevilla-Lara, Deqing Sun, Varun Jampani, and Michael J. Black. Optical flow with semantic segmentation and localized layers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Meet Shah, Xinlei Chen, Marcus Rohrbach, and Devi Parikh. Cycle-consistency for robust visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Sohil Shah, Tom Goldstein, and Christoph Studer. Estimating sparse signals with smooth support via convex programming and block sparsity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Marjan Shahpaski, Luis Ricardo Sapaico, Gaspard Chevassus, and Sabine Susstrunk. Simultaneous geometric and radiometric calibration of a projector-camera pair. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amir Shahroudy, Jun Liu, Tian-Tsong Ng, and Gang Wang. Ntu rgb+d: A large scale dataset for 3d human activity analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Amit Shaked and Lior Wolf. Improved stereo matching with constant highway networks and reflective confidence learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Moein Shakeri and Hong Zhang. Moving object detection under discontinuous change in illumination using tensor low-rank and invariant sparse decomposition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Gil Shamaï and Ron Kimmel. Geodesic distance descriptors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Sukrit Shankar, Duncan Robertson, Yani Ioannou, Antonio Criminisi, and Roberto Cipolla. Refining architectures of deep convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ishant Shanu, Chetan Arora, and Parag Singla. Min norm point algorithm for higher order mrf-map inference. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ishant Shanu, Chetan Arora, and S.N. Maheshwari. Inference in higher order mrf-map problems with small and large cliques. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jing Shao, Chen-Change Loy, Kai Kang, and Xiaogang Wang. Slicing convolutional neural network for crowd video understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Wenqi Shao, Tianjian Meng, Jingyu Li, Ruimao Zhang, Yudian Li, Xiaogang Wang, and Ping Luo. Ssn: Learning sparse switchable normalization via sparsestmax. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aidean Sharghi, Jacob S. Laurel, and Boqing Gong. Query-focused video summarization: Dataset, evaluation, and a memory network based approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Vivek Sharma, Ali Diba, Davy Neven, Michael S. Brown, Luc Van Gool, and Rainer Stiefelhagen. Classification-driven dynamic image enhancement. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Viktoria Sharmanska, Daniel Hernandez-Lobato, Jose Miguel Hernandez-Lobato, and Novi Quadrianto. Ambiguity helps: Classification with disagreements in crowdsourced annotations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mark Sheinin and Yoav Y. Schechner. The next best underwater view. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mark Sheinin, Yoav Y. Schechner, and Kiriakos N. Kutulakos. Computational imaging on the electric grid. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Hao Shen. Towards a mathematical understanding of the difficulty in learning with feedforward neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Wei Shen, Kai Zhao, Yuan Jiang, Yan Wang, Zhijiang Zhang, and Xiang Bai. Object skeleton extraction in natural images by fusing scale-associated deep side outputs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yunhang Shen, Rongrong Ji, Yan Wang, Yongjian Wu, and Liujuan Cao. Cyclic guidance for weakly supervised joint detection and segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhiqiang Shen, Jianguo Li, Zhou Su, Minjun Li, Yurong Chen, Yu-Gang Jiang, and Xiangyang Xue. Weakly supervised dense video captioning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Lu Sheng, Jianfei Cai, Tat-Jen Cham, Vladimir Pavlovic, and King Ngi Ngan. A generative model for depth-based robust 3d facial pose tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Lu Sheng, Ziyi Lin, Jing Shao, and Xiaogang Wang. Avatar-net: Multi-scale zero-shot style transfer by feature decoration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rakshith Shetty, Bernt Schiele, and Mario Fritz. Not using the car to see the sidewalk – quantifying and controlling the effects of context in classification and segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Irina Shevlev and Shai Avidan. Co-occurrence neural network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jian Shi, Yue Dong, Hao Su, and Stella X. Yu. Learning non-lambertian object intrinsics across shapenet categories. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shaoshuai Shi, Xiaogang Wang, and Hongsheng Li. Pointcnn: 3d object proposal generation and detection from point cloud. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wenzhe Shi, Jose Caballero, Ferenc Huszar, Johannes Totz, Andrew P. Aitken, Rob Bishop, Daniel Rueckert, and Zehan Wang. Real-time single image and video super-resolution using an efficient sub-pixel convolutional neural network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Xuepeng Shi, Shiguang Shan, Meina Kan, Shuzhe Wu, and Xilin Chen. Real-time rotation-invariant face detection with progressive calibration networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Takashi Shibata, Masayuki Tanaka, and Masatoshi Okutomi. Gradient-domain image reconstruction framework with intensity-range and base-structure constraints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kevin J. Shih, Saurabh Singh, and Derek Hoiem. Where to look: Focus regions for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ya-Fang Shih, Yang-Ming Yeh, Yen-Yu Lin, Ming-Fang Weng, Yi-Chang Lu, and Yung-Yu Chuang. Deep co-occurrence feature learning for visual object recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mihoko Shimano, Hiroki Okawa, Yuta Asano, Ryoma Bise, Ko Nishino, and Imari Sato. Wetness and color from a single multispectral image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Daeyun Shin, Charless C. Fowlkes, and Derek Hoiem. Pixels, voxels, and views: A study of shape representations for single view 3d object shape prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hoo-Chang Shin, Kirk Roberts, Le Lu, Dina Demner-Fushman, Jianhua Yao, and Ronald M. Summers. Learning to read chest x-rays: Recurrent neural cascade model for automated image annotation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jae Shin Yoon, Ziwei Li, and Hyun Soo Park. 3d semantic trajectory reconstruction from 3d pixel continuum. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Eli Shlizerman, Lucio Dery, Hayden Schoen, and Ira Kemelmacher-Shlizerman. Audio to body dynamics. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Assaf Shocher, Nadav Cohen, and Michal Irani. “zero-shot” super-resolution using deep internal learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zheng Shou, Dongang Wang, and Shih-Fu Chang. Temporal action localization in untrimmed videos via multi-stage cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zheng Shou, Jonathan Chan, Alireza Zareian, Kazuyuki Miyazawa, and Shih-Fu Chang. Cdc: Convolutional-de-convolutional networks for precise temporal action localization in untrimmed videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zheng Shou, Xudong Lin, Yannis Kalantidis, Laura Sevilla-Lara, Marcus Rohrbach, Shih-Fu Chang, and Zhicheng Yan. Dmc-net: Generating discriminative motion cues for fast compressed video action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Robik Shrestha, Kushal Kafle, and Christopher Kanan. Answer them all! toward universal visual question answering models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Abhinav Shrivastava, Abhinav Gupta, and Ross Girshick. Training region-based object detectors with online hard example mining. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ashish Shrivastava, Tomas Pfister, Oncel Tuzel, Joshua Susskind, Wenda Wang, and Russell Webb. Learning from simulated and unsupervised images through adversarial training. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tianmin Shu, Sinisa Todorovic, and Song-Chun Zhu. Cern: Confidence-energy recurrent network for group activity recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Bing Shuai, Zhen Zuo, Bing Wang, and Gang Wang. Dag-recurrent neural networks for scene labeling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Maria Shugrina, Ziheng Liang, Amlan Kar, Jiaman Li, Angad Singh, Karan Singh, and Sanja Fidler. Creative flow+ dataset. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kurt Shuster, Samuel Humeau, Hexiang Hu, Antoine Bordes, and Jason Weston. Engaging image captioning via personality. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Aliaksandra Shysheya, Egor Zakharov, Kara-Ali Aliev, Renat Bashirov, Egor Burkov, Karim Iskakov, Aleksei Ivakhnenko, Yury Malkov, Igor Pasechnik, Dmitry Ulyanov, Alexander Vakhtov, and Victor Lempitsky. Textured neural avatars. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chenyang Si, Wei Wang, Liang Wang, and Tieniu Tan. Multistage adversarial losses for pose-based human image synthesis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Chenyang Si, Wentao Chen, Wei Wang, Liang Wang, and Tieniu Tan. An attention enhanced graph convolutional lstm network for skeleton-based action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aliaksandr Siarohin, Enver Sangineto, Stéphane Lathuilière, and Nicu Sebe. Deformable gans for pose-based human image generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Aliaksandr Siarohin, Stephane Lathuiliere, Sergey Tulyakov, Elisa Ricci, and Nicu Sebe. Animating arbitrary objects via deep motion transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ronan Sifre, Yannis Avrithis, Ewa Kijak, and Frederic Jurie. Unsupervised part learning for visual recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gunnar A. Sigurdsson, Santosh Divvala, Ali Farhadi, and Abhinav Gupta. Asynchronous temporal fields for action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gunnar A. Sigurdsson, Abhinav Gupta, Cordelia Schmid, Ali Farhadi, and Karteek Alahari. Actor and observer: Joint modeling of first and third-person videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Karan Sikka, Gaurav Sharma, and Marian Bartlett. Lomo: Latent ordinal model for facial analysis in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Michel Silva, Washington Ramos, João Ferreira, Felipe Chamone, Mario Campos, and Erickson R. Nascimento. A weighted sparse sampling and smoothing frame transition approach for semantic fast-forward first-person videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Thiago L. T. da Silveira and Claudio R. Jung. Perturbation analysis of the 8-point algorithm: A case study for wide fov cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Oriane Simeoni, Yannis Avrithis, and Ondrej Chum. Local features and visual words emerge in activations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Edgar Simo-Serra and Hiroshi Ishikawa. Fashion style in 128 floats: Joint ranking and classification using weak data for feature extraction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tomas Simon, Hanbyul Joo, Iain Matthews, and Yaser Sheikh. Hand keypoint detection in single images using multiview bootstrapping. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Martin Simonovsky and Nikos Komodakis. Dynamic edge-conditioned filters in convolutional neural networks on graphs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Bharat Singh, Hengduo Li, Abhishek Sharma, and Larry S. Davis. R-fcn-3000 at 30fps: Decoupling detection and classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pravendra Singh, Vinay Kumar Verma, Piyush Rai, and Vinay P. Namboodiri. Hetconv: Heterogeneous kernel-based convolutions for deep cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Saurabh Singh, Derek Hoiem, and David Forsyth. Learning to localize little landmarks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ayan Sinha, Chiho Choi, and Karthik Ramani. Deephand: Robust hand pose estimation by completing a matrix imputed with deep features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ayan Sinha, Asim Unmesh, Qixing Huang, and Karthik Ramani. Surfnet: Generating 3d shape surfaces using deep residual networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amos Sironi, Manuele Brambilla, Nicolas Bourdis, Xavier Lagorce, and Ryad Benosman. Hats: Histograms of averaged time surfaces for robust event-based object classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Vincent Sitzmann, Justus Thies, Felix Heide, Matthias Niessner, Gordon Wetzstein, and Michael Zollhofer. Deepvoxels: Learning persistent 3d feature embeddings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nicki Skafted Detlefsen, Oren Freifeld, and Søren Hauberg. Deep diffeomorphic transformer networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Miroslava Slavcheva, Maximilian Baust, Daniel Cremers, and Slobodan Ilic. Killingfusion: Non-rigid 3d reconstruction without correspondences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Miroslava Slavcheva, Maximilian Baust, and Slobodan Ilic. Sobolevfusion: 3d reconstruction of scenes undergoing free non-rigid motion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Brandon M. Smith, Matthew O’Toole, and Mohit Gupta. Tracking multiple objects outside the line of sight using speckle imaging. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Leslie N. Smith, Emily M. Hand, and Timothy Doster. Gradual dropin of layers to train very deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jakub Sochor, Adam Herout, and Jiri Havel. Boxcars: 3d boxes as cnn input for improved fine-grained vehicle recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jae Woong Soh, Gu Yong Park, Junho Jo, and Nam Ik Cho. Natural and realistic single image super-resolution with explicit natural manifold discrimination. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jeany Son, Mooyeol Baek, Minsu Cho, and Bohyung Han. Multi-object tracking with quadruplet convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kilho Son, daniel Moreno, James Hays, and David B. Cooper. Solving small-piece jigsaw puzzles by growing consensus. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Joon Son Chung, Andrew Senior, Oriol Vinyals, and Andrew Zisserman. Lip reading sentences in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jifei Song, Kaiyue Pang, Yi-Zhe Song, Tao Xiang, and Timothy M. Hospedales. Learning to sketch with shortcut cycle consistency. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jifei Song, Yongxin Yang, Yi-Zhe Song, Tao Xiang, and Timothy M. Hospedales. Generalizable person re-identification by domain-invariant mapping network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Shuran Song and Jianxiong Xiao. Deep sliding shapes for amodal 3d object detection in rgb-d images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Shuran Song, Fisher Yu, Andy Zeng, Angel X. Chang, Manolis Savva, and Thomas Funkhouser. Semantic scene completion from a single depth image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Khurram Soomro, Haroon Idrees, and Mubarak Shah. Predicting the where and what of actors and actions through online action localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nasim Souly and Mubarak Shah. Scene labeling using sparse precision matrix. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Concetto Spampinato, Simone Palazzo, Isaak Kavasidis, Daniela Giordano, Nasim Souly, and Mubarak Shah. Deep learning human mind for automated visual classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pablo Speciale, Danda Pani Paudel, Martin R. Oswald, Till Kroeger, Luc Van Gool, and Marc Pollefeys. Consensus maximization with linear matrix inequality constraints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pablo Speciale, Danda P. Paudel, Martin R. Oswald, Hayko Riemenschneider, Luc Van Gool, and Marc Pollefeys. Consensus maximization for semantic region correspondences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pablo Speciale, Johannes L. Schonberger, Sing Bing Kang, Sudipta N. Sinha, and Marc Pollefeys. Privacy preserving image-based localization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jaime Spencer, Richard Bowden, and Simon Hadfield. Scale-adaptive neural dense features: Learning via hierarchical context aggregation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Adrian Spurr, Jie Song, Seonwook Park, and Otmar Hilliges. Cross-modal deep variational hand pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pratul P. Srinivasan, Ren Ng, and Ravi Ramamoorthi. Light field blind motion deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pratul P. Srinivasan, Rahul Garg, Neal Wadhwa, Ren Ng, and Jonathan T. Barron. Aperture supervision for monocular depth estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Pratul P. Srinivasan, Richard Tucker, Jonathan T. Barron, Ravi Ramamoorthi, Ren Ng, and Noah Snavely. Pushing the boundaries of view extrapolation with multiplane images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Russell Stewart, Mykhaylo Andriluka, and Andrew Y. Ng. End-to-end people detection in crowded scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Timo Stoffregen and Lindsay Kleeman. Event cameras, contrast maximization and reward functions: An analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Stefan Stojanov, Samarth Mishra, Ngoc Anh Thai, Nikhil Dhanda, Ahmad Humayun, Chen Yu, Linda B. Smith, and James M. Rehg. Incremental object learning from contiguous views. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Austin Stone, Huayan Wang, Michael Stark, Yi Liu, D. Scott Phoenix, and Dileep George. Teaching compositionality to cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Julian Straub, Trevor Campbell, Jonathan P. How, and John W. Fisher, III. Efficient global point cloud alignment using bayesian nonparametric mixtures. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Michael Strecke, Anna Alperovich, and Bastian Goldluecke. Accurate depth and normal maps from occlusion-aware focal stack symmetry. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Elena Stumm, Christopher Mei, Simon Lacroix, Juan Nieto, Marco Hutter, and Roland Siegwart. Robust visual place recognition with graph kernels. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- David Stutz and Andreas Geiger. Learning 3d shape completion from laser scan data with weak supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- David Stutz, Matthias Hein, and Bernt Schiele. Disentangling adversarial robustness and generalization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bing Su and Gang Hua. Order-preserving wasserstein distance for sequence matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hang Su, Varun Jampani, Deqing Sun, Subhransu Maji, Evangelos Kalogerakis, Ming-Hsuan Yang, and Jan Kautz. Splatnet: Sparse lattice networks for point cloud processing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kai Su, Dongdong Yu, Zhenqi Xu, Xin Geng, and Changhu Wang. Multi-person pose estimation with enhanced channel-wise and spatial information. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Shuochen Su, Felix Heide, Robin Swanson, Jonathan Klein, Clara Callenberg, Matthias Hullin, and Wolfgang Heidrich. Material classification using raw time-of-flight measurements. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Swathikiran Sudhakaran, Sergio Escalera, and Oswald Lanz. Lsta: Long short-term attention for egocentric action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Masanori Suganuma, Xing Liu, and Takayuki Okatani. Attention-based adaptive selection of operations for image restoration in the presence of unknown combined distortions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yumin Suh, Bohyung Han, Wonsik Kim, and Kyoung Mu Lee. Stochastic class-based hard example mining for deep metric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Waqas Sultani and Mubarak Shah. What if we do not have multiple videos of the same action? – video action localization using web images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Waqas Sultani, Chen Chen, and Mubarak Shah. Real-world anomaly detection in surveillance videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Chen Sun, Manohar Paluri, Ronan Collobert, Ram Nevatia, and Lubomir Bourdev. Pronet: Learning to propose object-specific boxes for cascaded neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chen Sun, Abhinav Shrivastava, Carl Vondrick, Rahul Sukthankar, Kevin Murphy, and Cordelia Schmid. Relational action forecasting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Haoliang Sun, Xiantong Zhen, Yuanjie Zheng, Gongping Yang, Yilong Yin, and Shuo Li. Learning deep match kernels for image-set classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Qilin Sun, Xiong Dun, Yifan Peng, and Wolfgang Heidrich. Depth and transient imaging with compressive spad array cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Flood Sung, Yongxin Yang, Li Zhang, Tao Xiang, Philip H.S. Torr, and Timothy M. Hospedales. Learning to compare: Relation network for few-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jaeheung Surh, Hae-Gon Jeon, Yunwon Park, Sunghoon Im, Hyowon Ha, and In So Kweon. Noise robust depth from focus using a ring difference filter. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Didac Suris, Adria Recasens, David Bau, David Harwath, James Glass, and Antonio Torralba. Learning words by drawing images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tomoyuki Suzuki, Hirokatsu Kataoka, Yoshimitsu Aoki, and Yutaka Satoh. Anticipating traffic accidents with adaptive loss and large-scale incident db. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Paul Swoboda and Vladimir Kolmogorov. Map inference via block-coordinate frank-wolfe algorithm. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Paul Swoboda, Jan Kuske, and Bogdan Savchynskyy. A dual ascent framework for lagrangean decomposition of combinatorial problems. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Christian Szegedy, Vincent Vanhoucke, Sergey Ioffe, Jon Shlens, and Zbigniew Wojna. Rethinking the inception architecture for computer vision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mario Sznajder and Octavia Camps. Sos-rsc: A sum-of-squares polynomial approach to robustifying subspace clustering algorithms. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Domen Tabernik, Matej Kristan, and Aleš Leonardis. Spatially-adaptive filter units for deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Saeid Asgari Taghanaki, Kumar Abhishek, Shekoofeh Azizi, and Ghassan Hamarneh. A kernelized manifold mapping to diminish the effect of adversarial perturbations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Ying Tai, Jian Yang, and Xiaoming Liu. Image super-resolution via deep recursive residual network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hajime Taira, Masatoshi Okutomi, Torsten Sattler, Mircea Cimpoi, Marc Pollefeys, Josef Sivic, Tomas Pajdla, and Akihiko Torii. Inloc: Indoor visual localization with dense matching and view synthesis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kosuke Takahashi, Akihiro Miyata, Shohei Nobuhara, and Takashi Matsuyama. A linear extrinsic calibration of kaleidoscopic imaging system from single 3d point. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tsuyoshi Takatani, Takahito Aoto, and Yasuhiro Mukaigawa. One-shot hyperspectral imaging using faced reflectors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shoichiro Takeda, Kazuki Okami, Dan Mikami, Megumi Isogai, and Hideaki Kimata. Jerk-aware video acceleration magnification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Shoichiro Takeda, Yasunori Akagi, Kazuki Okami, Megumi Isogai, and Hideaki Kimata. Video magnification in the wild using fractional anisotropy in temporal distribution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Lior Talker, Yael Moses, and Ilan Shimshoni. Using spatial order to boost the elimination of incorrect feature matches. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Itamar Talmi, Roey Mechrez, and Lihi Zelnik-Manor. Template matching with deformable diversity similarity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Youssef Tamaazousti, Herve Le Borgne, and Celine Hudelot. Mucale-net: Multi categorical-level networks to generate more discriminating features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mingxing Tan, Bo Chen, Ruoming Pang, Vijay Vasudevan, Mark Sandler, Andrew Howard, and Quoc V. Le. Mnasnet: Platform-aware neural architecture search for mobile. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Weimin Tan, Bo Yan, and Bahetiyaer Bare. Feature super-resolution: Make machine see more clearly. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kenichiro Tanaka, Yasuhiro Mukaigawa, Hiroyuki Kubo, Yasuyuki Matsushita, and Yasushi Yagi. Recovering transparent shape from time-of-flight distortion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kenichiro Tanaka, Yasuhiro Mukaigawa, Takuya Funatomi, Hiroyuki Kubo, Yasuyuki Matsushita, and Yasushi Yagi. Material classification using frequency- and depth-dependent time-of-flight distortion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kenichiro Tanaka, Nobuhiro Ikeya, Tsuyoshi Takatani, Hiroyuki Kubo, Takuya Funatomi, and Yasuhiro Mukaigawa. Time-resolved light transport decomposition for thermal photometric stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Huixuan Tang, Scott Cohen, Brian Price, Stephen Schiller, and Kiriakos N. Kutulakos. Depth from defocus in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Meng Tang, Abdelaziz Djelouah, Federico Perazzi, Yuri Boykov, and Christopher Schroers. Normalized cut loss for weakly-supervised cnn segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Wei Tang and Ying Wu. Does learning specific features for related parts help human pose estimation? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yuxing Tang, Josiah Wang, Boyang Gao, Emmanuel Dellandrea, Robert Gaizauskas, and Liming Chen. Large scale semi-supervised object detection using visual and semantic knowledge transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tatsunori Tanai, Sudipta N. Sinha, and Yoichi Sato. Joint recovery of dense correspondence and cosegmentation in two images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tatsunori Tanai, Sudipta N. Sinha, and Yoichi Sato. Fast multi-frame stereo scene flow with motion segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ryutaro Tanno, Ardavan Saeedi, Swami Sankaranarayanan, Daniel C. Alexander, and Nathan Silberman. Learning from noisy labels by regularized estimation of annotator confusion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ran Tao, Efstratios Gavves, and Arnold W.M. Smeulders. Siamese instance search for tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Xin Tao, Hongyun Gao, Xiaoyong Shen, Jue Wang, and Jiaya Jia. Scale-recurrent network for deep image deblurring. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Makarand Tapaswi, Yukun Zhu, Rainer Stiefel, Antonio Torralba, Raquel Urtasun, and Sanja Fidler. Movieqa: Understanding stories in movies through question-answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Olga Taran, Shideh Rezaeifar, Taras Holotyak, and Slava Voloshynovskiy. Defending against adversarial attacks by randomized diversification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Maxim Tatarchenko, Jaesik Park, Vladlen Koltun, and Qian-Yi Zhou. Tangent convolutions for dense prediction in 3d. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Maxim Tatarchenko, Stephan R. Richter, Rene Ranftl, Zhuwen Li, Vladlen Koltun, and Thomas Brox. What do single-view 3d reconstruction networks learn? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Keisuke Tateno, Federico Tombari, Iro Laina, and Nassir Navab. Cnn-slam: Real-time dense monocular slam with learned depth prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Hamed R. Tavakoli, Fawad Ahmed, Ali Borji, and Jorma Laaksonen. Saliency revisited: Analysis of mouse movements versus fixations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Chiat-Pin Tay, Sharmili Roy, and Kim-Hui Yap. Aanet: Attribute attention network for person re-identifications. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Lyne P. Tchammi, Vineet Kosaraju, Hamid Rezatofighi, Ian Reid, and Silvio Savarese. Topnet: Structural point cloud decoder. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Marvin Teichmann, Andre Araujo, Menglong Zhu, and Jack Sim. Detect-to-retrieve: Efficient regional aggregation for image search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Brian Teixeira, Vivek Singh, Terrence Chen, Kai Ma, Birgi Tamersoy, Yifan Wu, Elena Balashova, and Dorin Comaniciu. Generating synthetic x-ray images of a person from the surface geometry. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ravi Teja Mullapudi, William R. Mark, Noam Shazeer, and Kayvon Fatahalian. Hydranets: Specialized dynamic architectures for efficient inference. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Bugra Tekin, Artem Rozantsev, Vincent Lepetit, and Pascal Fua. Direct prediction of 3d body poses from motion compensated sequences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Bugra Tekin, Sudipta N. Sinha, and Pascal Fua. Real-time seamless single shot 6d object pose prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Bugra Tekin, Federica Bogo, and Marc Pollefeys. H+o: Unified egocentric recognition of 3d hand-object poses and interactions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Damien Teney and Anton van den Hengel. Actively seeking and learning from live data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Damien Teney, Lingqiao Liu, and Anton van den Hengel. Graph-structured representations for visual question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Damien Teney, Peter Anderson, Xiaodong He, and Anton van den Hengel. Tips and tricks for visual question answering: Learnings from the 2017 challenge. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Daniel Teo, Boxin Shi, Yinqiang Zheng, and Sai-Kit Yeung. Self-calibrating polarising radiometric calibration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mariano Tepper and Guillermo Sapiro. Nonnegative matrix underapproximation for robust multiple model fitting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Matthew Tesfaldet, Marcus A. Brubaker, and Konstantinos G. Derpanis. Two-stream convolutional networks for dynamic texture synthesis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ayush Tewari, Michael Zollhöfer, Pablo Garrido, Florian Bernard, Hyeonwoo Kim, Patrick Pérez, and Christian Theobalt. Self-supervised multi-level face model learning for monocular reconstruction at over 250 hz. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ayush Tewari, Florian Bernard, Pablo Garrido, Gaurav Bharaj, Mohamed Elgharib, Hans-Peter Seidel, Patrick Perez, Michael Zollhofer, and Christian Theobalt. Fml: Face model learning from videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rajkumar Theagarajan, Ming Chen, Bir Bhanu, and Jing Zhang. Shieldnets: Defending against adversarial attacks using probabilistic adversarial robustness. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Spyridon Thermos, Georgios Th. Papadopoulos, Petros Daras, and Gerasimos Potamianos. Deep affordance-grounded sensorimotor object recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Justus Thies, Michael Zollhofer, Marc Stamminger, Christian Theobalt, and Matthias Niessner. Face2face: Real-time face capture and reenactment of rgb videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Janine Thoma, Danda Pani Paudel, Ajad Chhatkuli, Thomas Probst, and Luc Van Gool. Mapping, localization and path planning for image-based navigation using visual features and map. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Diego Thomas and Rin-ichiro Taniguchi. Augmented blendshapes for real-time simultaneous 3d head modeling and facial motion capture. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Maoqing Tian, Shuai Yi, Hongsheng Li, Shihua Li, Xuesen Zhang, Jianping Shi, Junjie Yan, and Xiaogang Wang. Eliminating background-bias for robust person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yurun Tian, Bin Fan, and Fuchao Wu. L2-net: Deep learning of discriminative patch descriptor in euclidean space. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zhi Tian, Tong He, Chunhua Shen, and Youliang Yan. Decoders matter for semantic segmentation: Data-dependent decoding enables flexible feature aggregation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Radu Timofte, Rasmus Rothe, and Luc Van Gool. Seven ways to improve example-based single image super resolution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tal Tlusty, Tomer Michaeli, Tali Dekel, and Lihi Zelnik-Manor. Modifying non-local variations across multiple views. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- George Toderici, Damien Vincent, Nick Johnston, Sung Jin Hwang, David Minnen, Joel Shor, and Michele Covell. Full resolution image compression with recurrent neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Pavel Tokmakov, Karteek Alahari, and Cordelia Schmid. Learning motion patterns in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yuji Tokozume, Yoshitaka Ushiku, and Tatsuya Harada. Between-class learning for image classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hiroki Tokunaga, Yuki Teramoto, Akihiko Yoshizawa, and Ryoma Bise. Adaptive weighting multi-field-of-view cnn for semantic segmentation in pathology. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Giorgos Tolias and Ondrej Chum. Asymmetric feature maps with application to sketch based retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Denis Tome, Chris Russell, and Lourdes Agapito. Lifting from the deep: Convolutional 3d pose estimation from a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Matteo Tomei, Marcella Cornia, Lorenzo Baraldi, and Rita Cucchiara. Art2real: Unfolding the reality of artworks via semantically-aware image-to-image translation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bin Tong, Chao Wang, Martin Klinkigt, Yoshiyuki Kobayashi, and Yuichi Nonaka. Hierarchical disentanglement of discriminative latent features for zero-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Alessio Tonioni, Fabio Tosi, Matteo Poggi, Stefano Mattoccia, and Luigi Di Stefano. Real-time self-adaptive deep stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Fabio Tosi, Filippo Aleotti, Matteo Poggi, and Stefano Mattoccia. Learning monocular depth estimation infusing traditional stereo knowledge. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Matthew Trager, Martial Hebert, and Jean Ponce. Consistency of silhouettes and their duals. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Matthew Trager, Bernd Sturmfels, John Canny, Martial Hebert, and Jean Ponce. General models for rational cameras and the case of two-slit projections. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Matthew Trager, Martial Hebert, and Jean Ponce. Coordinate-free carlsson-weinshall duality and relative multi-view geometry. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Du Tran, Heng Wang, Lorenzo Torresani, Jamie Ray, Yann LeCun, and Manohar Paluri. A closer look at spatiotemporal convolutions for action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Luan Tran, Xiaoming Liu, Jiayu Zhou, and Rong Jin. Missing modalities imputation via cascaded residual autoencoder. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Luan Tran, Feng Liu, and Xiaoming Liu. Towards high-fidelity nonlinear 3d face morphable model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wayne Treible, Philip Saponaro, Scott Sorensen, Abhishek Kolagunda, Michael O’Neal, Brian Phelan, Kelly Sherbondy, and Chandra Kambhampettu. Cats: A color and thermal stereo benchmark. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- George Trigeorgis, Patrick Snape, Mihalisis A. Nicolaou, Epameinondas Antonakos, and Stefanos Zafeiriou. Mnemonic descent method: A recurrent process applied for end-to-end face alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- George Trigeorgis, Patrick Snape, Iasonas Kokkinos, and Stefanos Zafeiriou. Face normals “in-the-wild” using fully convolutional networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shashank Tripathi, Siddhartha Chandra, Amit Agrawal, Amrith Tyagi, James M. Rehg, and Visesh Chari. Learning to generate synthetic data via compositing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Elena Trunz, Sebastian Merzbach, Jonathan Klein, Thomas Schulze, Michael Weinmann, and Reinhard Klein. Inverse procedural modeling of knitwear. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chia-Yin Tsai, Aswin C. Sankaranarayanan, and Ioannis Gkioulekas. Beyond volumetric albedo – a surface optimization framework for non-line-of-sight imaging. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yi-Hsuan Tsai, Ming-Hsuan Yang, and Michael J. Black. Video segmentation via object flow. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yi-Hsuan Tsai, Xiaohui Shen, Zhe Lin, Kalyan Sunkavalli, Xin Lu, and Ming-Hsuan Yang. Deep image harmonization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yi-Hsuan Tsai, Wei-Chih Hung, Samuel Schulter, Kihyuk Sohn, Ming-Hsuan Yang, and Manmohan Chandraker. Learning to adapt structured output space for semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Kuan-Lun Tseng, Yen-Liang Lin, Winston Hsu, and Chung-Yang Huang. Joint sequence learning and cross-modality convolution for 3d biomedical segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Yusuke Tsuzuku and Issei Sato. On the structural sensitivity of deep convolutional networks to the directions of fourier basis functions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wei-Chih Tu, Shengfeng He, Qingxiong Yang, and Shao-Yi Chien. Real-time salient object detection with a minimum spanning tree. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Wei-Chih Tu, Ming-Yu Liu, Varun Jampani, Deqing Sun, Shao-Yi Chien, Ming-Hsuan Yang, and Jan Kautz. Learning superpixels with segmentation-aware affinity loss. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Radu Tudor Ionescu, Bogdan Alexe, Marius Leordeanu, Marius Popescu, Dim P. Papadopoulos, and Vittorio Ferrari. How hard can it be? estimating the difficulty of visual search in an image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Shubham Tulsiani, Tinghui Zhou, Alexei A. Efros, and Jitendra Malik. Multi-view supervision for single-view reconstruction via differentiable ray consistency. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shubham Tulsiani, Saurabh Gupta, David F. Fouhey, Alexei A. Efros, and Jitendra Malik. Factoring shape, pose, and layout from the 2d image of a 3d scene. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sergey Tulyakov, Xavier Alameda-Pineda, Elisa Ricci, Lijun Yin, Jeffrey F. Cohn, and Nicu Sebe. Self-adaptive matrix completion for heart rate estimation from face videos under realistic conditions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Sergey Tulyakov, Ming-Yu Liu, Xiaodong Yang, and Jan Kautz. Mocogan: Decomposing motion and content for video generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hsiao-Yu Tung, Adam W. Harley, Liang-Kang Huang, and Katerina Fragkiadaki. Reward learning from narrated demonstrations. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hsiao-Yu Fish Tung, Ricson Cheng, and Katerina Fragkiadaki. Learning spatial common sense with geometry-aware recurrent networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Javier S. Turek and Alexander G. Huth. Efficient, sparse representation of manifold distance matrices for classical scaling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Lachlan Tychsen-Smith and Lars Petersson. Improving object localization with fitness nms and bounded iou loss. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Eric Tzeng, Judy Hoffman, Kate Saenko, and Trevor Darrell. Adversarial discriminative domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Takeshi Uemori, Atsushi Ito, Yusuke Moriuchi, Alexander Gatto, and Jun Murayama. Skin-based identification from multispectral image data using cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Nikolai Ufer and Bjorn Ommer. Deep semantic feature matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jasper Uijlings, Stefan Popov, and Vittorio Ferrari. Revisiting knowledge transfer for training object class detectors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Ries Uittenbogaard, Clint Sebastian, Julien Vijverberg, Bas Boom, Darius M. Gavrilă, and Peter H.N. de With. Privacy protection in street-view panoramas using depth and multi-view imagery. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dmitry Ulyanov, Andrea Vedaldi, and Victor Lempitsky. Improved texture networks: Maximizing quality and diversity in feed-forward stylization and texture synthesis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Dmitry Ulyanov, Andrea Vedaldi, and Victor Lempitsky. Deep image prior. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Benjamin Ummenhofer, Huizhong Zhou, Jonas Uhrig, Nikolaus Mayer, Eddy Ilg, Alexey Dosovitskiy, and Thomas Brox. Demon: Depth and motion network for learning monocular stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Paul Upchurch, Jacob Gardner, Geoff Pleiss, Robert Pless, Noah Snavely, Kavita Bala, and Kilian Weinberger. Deep feature interpolation for image content changes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Aisha Urooj and Ali Borji. Analysis of hand segmentation in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Anil Usumezbas, Ricardo Fabbri, and Benjamin B. Kimia. The surfacing of multiview 3d drawings via lofting and occlusion reasoning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jack Valmadre, Luca Bertinetto, Joao Henriques, Andrea Vedaldi, and Philip H. S. Torr. End-to-end representation learning for correlation filter based tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Grant Van Horn, Steve Branson, Scott Loarie, Serge Belongie, and Pietro Perona. Lean multiclass crowdsourcing. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Gul Varol, Javier Romero, Xavier Martin, Naureen Mahmood, Michael J. Black, Ivan Laptev, and Cordelia Schmid. Learning from synthetic humans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Subeesh Vasu and A. N. Rajagopalan. From local to global: Edge profiles to camera motion in blurred images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Subeesh Vasu, Mahesh M. R. Mohan, and A. N. Rajagopalan. Occlusion-aware rolling shutter rectification of 3d scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ramakrishna Vedantam, Samy Bengio, Kevin Murphy, Devi Parikh, and Gal Chechik. Context-aware captions from context-agnostic supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- VSR Veeravasarpap, Constantin Rothkopf, and Ramesh Visvanathan. Adversarially tuned scene generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Andreas Veit, Serge Belongie, and Theofanis Karaletsos. Conditional similarity networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Andreas Veit, Maximilian Nickel, Serge Belongie, and Laurens van der Maaten. Separating self-expression and visual content in hashtag supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Raviteja Vemulapalli and Aseem Agarwala. A compact embedding for facial expression similarity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Raviteja Vemulapalli, Oncel Tuzel, Ming-Yu Liu, and Rama Chellapa. Gaussian conditional random field network for semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hemanth Venkateswara, Jose Eusebio, Shayok Chakraborty, and Sethuraman Panchanathan. Deep hashing network for unsupervised domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Carles Ventura, Miriam Bellver, Andreu Girbau, Amaia Salvador, Ferran Marques, and Xavier Giro-i Nieto. Rvos: End-to-end recurrent network for video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Subhashini Venugopalan, Lisa Anne Hendricks, Marcus Rohrbach, Raymond Mooney, Trevor Darrell, and Kate Saenko. Captioning images with diverse objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Cedric Verleysen and Christophe De Vleeschouwer. Piecewise-planar 3d approximation from wide-baseline stereo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nitika Verma, Edmond Boyer, and Jakob Verbeek. Feastnet: Feature-steered graph convolutions for 3d shape analysis. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Paul Vernaza and Manmohan Chandraker. Learning random-walk label propagation for weakly-supervised semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Matthias Vestner, Roei Litman, Emanuele Rodola, Alex Bronstein, and Daniel Cremers. Product manifold filter: Non-rigid shape correspondence via kernel density estimation in the product space. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Alessandro Vianello, Jens Ackermann, Maximilian Diebold, and Bernd Jähne. Robust hough transform based 3d reconstruction from circular light fields. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Paul Vicol, Makarand Tapaswi, Lluís Castrejón, and Sanja Fidler. Moviegraphs: Towards understanding human-centric situations from videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ruben Villegas, Jimei Yang, Duygu Ceylan, and Honglak Lee. Neural kinematic networks for unsupervised motion retargeting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Minh Vo, Srinivasa G. Narasimhan, and Yaser Sheikh. Spatiotemporal bundle adjustment for dynamic 3d reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Nam Vo, Lu Jiang, Chen Sun, Kevin Murphy, Li-Jia Li, Li Fei-Fei, and James Hays. Composing text and image for image retrieval - an empirical odyssey. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Paul Voigtlaender, Michael Krause, Aljosa Osep, Jonathon Luiten, Berin Balachandar Gnana Sekar, Andreas Geiger, and Bastian Leibe. Mots: Multi-object tracking and segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Anna Volokitin, Michael Gygli, and Xavier Boix. Predicting when saliency maps are accurate and eye fixations consistent. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Riccardo Volpi, Pietro Morerio, Silvio Savarese, and Vittorio Murino. Adversarial feature augmentation for unsupervised domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Carl Vondrick and Antonio Torralba. Generating the future with adversarial transformers. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Carl Vondrick, Hamed Pirsiavash, and Antonio Torralba. Anticipating visual representations from unlabeled video. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jayakorn Vongkulbhisal, Ricardo Cabral, Fernando De la Torre, and Joao P. Costeira. Motion from structure (mfs): Searching for 3d objects in cluttered point trajectories. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jayakorn Vongkulbhisal, Fernando De la Torre, and Joao P. Costeira. Discriminative optimization: Theory and applications to point cloud registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jayakorn Vongkulbhisal, Beñat Irastorza Ugalde, Fernando De la Torre, and João P. Costeira. Inverse composition discriminative optimization for point cloud registration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jayakorn Vongkulbhisal, Phongtharin Vinayavekhin, and Marco Visentini-Scarzanella. Unifying heterogeneous classifiers with distillation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tuan-Hung Vu, Himalaya Jain, Maxime Bucher, Matthieu Cord, and Patrick Perez. Advent: Adversarial entropy minimization for domain adaptation in semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jorg Wagner, Jan Mathias Kohler, Tobias Gindele, Leon Hetzel, Jakob Thaddaus Wiedemer, and Sven Behnke. Interpretable and fine-grained visual explanations for convolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Robert Walecki, Ognjen Rudovic, Vladimir Pavlovic, and Maja Pantic. Copula ordinal regression for joint estimation of facial action unit intensity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Robert Walecki, Ognjen (Oggi) Rudovic, Vladimir Pavlovic, Bjoern Schuller, and Maja Pantic. Deep structured learning for facial action unit intensity estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Chengde Wan, Thomas Probst, Luc Van Gool, and Angela Yao. Crossing nets: Combining gans and vaes with a shared latent space for hand pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Fang Wan, Pengxu Wei, Jianbin Jiao, Zhenjun Han, and Qixiang Ye. Min-entropy latent model for weakly supervised object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fang Wan, Chang Liu, Wei Ke, Xiangyang Ji, Jianbin Jiao, and Qixiang Ye. C-mil: Continuation multiple instance learning for weakly supervised object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bastian Wandt and Bodo Rosenhahn. Repnet: Weakly supervised training of an adversarial reprojection network for 3d human pose estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chen Wang, Jianfei Yang, Lihua Xie, and Junsong Yuan. Kervolutional neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Kang Wang, Rui Zhao, and Qiang Ji. A hierarchical generative model for eye image synthesis and eye gaze estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Lijun Wang, Huchuan Lu, Yifan Wang, Mengyang Feng, Dong Wang, Baocai Yin, and Xiang Ruan. Learning to detect salient objects with image-level supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Shenlong Wang, Sean Ryan Fanello, Christoph Rhemann, Shahram Izadi, and Pushmeet Kohli. The global patch collider. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ryan Webster, Julien Rabin, Loic Simon, and Frederic Jurie. Detecting overfitting of deep generative networks via latent recovery. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jan D. Wegner, Steven Branson, David Hall, Konrad Schindler, and Pietro Perona. Cataloging public objects using aerial and street-level images - urban trees. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Jônatas Wehrmann and Rodrigo C. Barros. Bidirectional retrieval made simple. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Chen Wei, Lingxi Xie, Xutong Ren, Yingda Xia, Chi Su, Jiaying Liu, Qi Tian, and Alan L. Yuille. Iterative reorganization with weak spatial constraints: Solving arbitrary jigsaw puzzles for unsupervised representation learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Lingyu Wei, Qixing Huang, Duygu Ceylan, Etienne Vouga, and Hao Li. Dense human body correspondences using convolutional networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Longhui Wei, Shiliang Zhang, Wen Gao, and Qi Tian. Person transfer gan to bridge domain gap for person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yunchao Wei, Jiashi Feng, Xiaodan Liang, Ming-Ming Cheng, Yao Zhao, and Shuicheng Yan. Object region mining with adversarial erasing: A simple classification to semantic segmentation approach. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Maurice Weiler, Fred A. Hamprecht, and Martin Storath. Learning steerable filters for rotation equivariant cnns. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Philippe Weinzaepfel, Gabriela Csurka, Yohann Cabon, and Martin Humenberger. Visual localization by learning objects-of-interest dense match regression. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Qiang Wen, Yinjie Tan, Jing Qin, Wenxi Liu, Guoqiang Han, and Shengfeng He. Single image reflection removal beyond linearity. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yandong Wen, Zhifeng Li, and Yu Qiao. Latent factor guided convolutional neural networks for age-invariant face recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chung-Yi Weng, Brian Curless, and Ira Kemelmacher-Shlizerman. Photo wake-up: 3d character animation from a single photo. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Junwu Weng, Chaoqun Weng, and Junsong Yuan. Spatio-temporal naive-bayes nearest-neighbor (st-nbnn) for skeleton-based action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Eric Wengrowski and Kristin Dana. Light field messaging with deep photographic steganography. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Davis Wertheimer and Bharath Hariharan. Few-shot learning with localization in realistic settings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Matthew Wicker and Marta Kwiatkowska. Robustness of 3d deep learning in an adversarial setting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Patrick Wieschollek, Oliver Wang, Alexander Sorkine-Hornung, and Hendrik P. A. Lensch. Efficient large-scale approximate nearest neighbor search on the gpu. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Maggie Wigness and John G. Rogers, III. Unsupervised semantic scene labeling for streaming data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Erik Wijmans and Yasutaka Furukawa. Exploiting 2d floorplan for building-scale panorama rgb-d alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Erik Wijmans, Samyak Datta, Oleksandr Maksymets, Abhishek Das, Georgia Gkioxari, Stefan Lee, Irfan Essa, Devi Parikh, and Dhruv Batra. Embodied question answering in photorealistic environments with point cloud perception. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Francis Williams, Teseo Schneider, Claudio Silva, Denis Zorin, Joan Bruna, and Daniele Panozzo. Deep geometric prior for surface reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- W. Williem and In Kyu Park. Robust light field depth estimation for noisy scene with occlusion. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Calden Wloka and John Tsotsos. Spatially binned roc: A comprehensive saliency metric. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Calden Wloka, Iuliia Kotseruba, and John K. Tsotsos. Active fixation control to predict saccade sequences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Mark Wolff, Robert T. Collins, and Yanxi Liu. Regularity-driven facade matching between aerial and street views. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Alex Wong and Stefano Soatto. Bilateral cyclic constraint and adaptive regularization for unsupervised monocular depth prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Daniel E. Worrall, Stephan J. Garbin, Daniyar Turmukhambetov, and Gabriel J. Brostow. Harmonic networks: Deep translation and rotation equivariance. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Mitchell Wortsman, Kiana Ehsani, Mohammad Rastegari, Ali Farhadi, and Roozbeh Mottaghi. Learning to learn how to learn: Self-adaptive visual navigation using meta-learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chao-Yuan Wu, Christoph Feichtenhofer, Haoqi Fan, Kaiming He, Philipp Krahenbuhl, and Ross Girshick. Long-term feature banks for detailed video understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Huikai Wu, Shuai Zheng, Junge Zhang, and Kaiqi Huang. Fast end-to-end trainable guided filter. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jiajun Wu, Joshua B. Tenenbaum, and Pushmeet Kohli. Neural scene de-rendering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Qi Wu, Chunhua Shen, Lingqiao Liu, Anthony Dick, and Anton van den Hengel. What value do explicit high level concepts have in vision to language problems? In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Seoung Wug Oh, Michael S. Brown, Marc Pollefeys, and Seon Joo Kim. Do it yourself hyperspectral imaging with everyday digital cameras. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Seoung Wug Oh, Joon-Young Lee, Kalyan Sunkavalli, and Seon Joo Kim. Fast video object segmentation by reference-guided mask propagation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jonas Wulff, Laura Sevilla-Lara, and Michael J. Black. Optical flow in mostly rigid scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Changqun Xia, Jia Li, Xiaowu Chen, Anlin Zheng, and Yu Zhang. What is and what is not a salient object? learning salient object detector by ensembling linear exemplar regressors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Gui-Song Xia, Xiang Bai, Jian Ding, Zhen Zhu, Serge Belongie, Jiebo Luo, Mihai Datcu, Marcello Pelillo, and Liangpei Zhang. Dota: A large-scale dataset for object detection in aerial images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ke Xian, Chunhua Shen, Zhiguo Cao, Hao Lu, Yang Xiao, Ruibo Li, and Zhenbo Luo. Monocular relative depth perception with web stereo data supervision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yongqin Xian, Zeynep Akata, Gaurav Sharma, Quynh Nguyen, Matthias Hein, and Bernt Schiele. Latent embeddings for zero-shot classification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yongqin Xian, Bernt Schiele, and Zeynep Akata. Zero-shot learning - the good, the bad and the ugly. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yongqin Xian, Subhabrata Choudhury, Yang He, Bernt Schiele, and Zeynep Akata. Semantic projection network for zero- and few-label semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chong Xiang, Charles R. Qi, and Bo Li. Generating 3d adversarial point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chaowei Xiao, Dawei Yang, Bo Li, Jia Deng, and Mingyan Liu. Meshadv: Adversarial meshes for visual recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Fanyi Xiao and Yong Jae Lee. Track and segment: An iterative unsupervised approach for video object proposals. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Huaxin Xiao, Jiashi Feng, Guosheng Lin, Yu Liu, and Maojun Zhang. Monet: Deep motion exploitation for video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tong Xiao, Shuang Li, Bochao Wang, Liang Lin, and Xiaogang Wang. Joint detection and identification feature learning for person search. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Cihang Xie, Yuxin Wu, Laurens van der Maaten, Alan L. Yuille, and Kaiming He. Feature denoising for improving adversarial robustness. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Lingxi Xie, Liang Zheng, Jingdong Wang, Alan L. Yuille, and Qi Tian. Interactive: Inter-layer activeness propagation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Saining Xie, Ross Girshick, Piotr Dollar, Zhuowen Tu, and Kaiming He. Aggregated residual transformations for deep neural networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Shuqin Xie, Zitian Chen, Chao Xu, and Cewu Lu. Environment upgrade reinforcement learning for non-differentiable multi-stage pipelines. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Shumian Xin, Sotiris Nousias, Kiriakos N. Kutulakos, Aswin C. Sankaranarayanan, Srinivasa G. Narasimhan, and Ioannis Gkioulekas. A theory of fermat paths for non-line-of-sight shape reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chao Xing, Xin Geng, and Hui Xue. Logistic boosting regression for label distribution learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Xianglei Xing, Tian Han, Ruiqi Gao, Song-Chun Zhu, and Ying Nian Wu. Unsupervised disentangling of appearance and geometry by deformable generator network. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Bo Xiong, Yannis Kalantidis, Deepti Ghadiyaram, and Kristen Grauman. Less is more: Learning highlight detection from video duration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Wei Xiong, Wenhan Luo, Lin Ma, Wei Liu, and Jiebo Luo. Learning to generate time-lapse videos using multi-stage dynamic generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zhiwei Xiong, Lizhi Wang, Huiqun Li, Dong Liu, and Feng Wu. Snapshot hyperspectral light field imaging. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Danfei Xu, Dragomir Anguelov, and Ashesh Jain. Pointfusion: Deep sensor fusion for 3d bounding box estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ning Xu, Brian Price, Scott Cohen, Jimei Yang, and Thomas S. Huang. Deep interactive object selection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Shuangjie Xu, Daizong Liu, Linchao Bao, Wei Liu, and Pan Zhou. Mhp-vos: Multiple hypotheses propagation for video object segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhongwen Xu, Linchao Zhu, and Yi Yang. Few-shot object recognition from machine-labeled web images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jia Xue, Hang Zhang, Kristin Dana, and Ko Nishino. Differential angular imaging for material recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jia Xue, Hang Zhang, and Kristin Dana. Deep texture manifold for ground terrain recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Nan Xue, Song Bai, Fudong Wang, Gui-Song Xia, Tianfu Wu, and Liangpei Zhang. Learning attraction field representation for robust line segment detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Takuma Yagi, Karttikeya Mangalam, Ryo Yonetani, and Yoichi Sato. Future person localization in first-person videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tomas F. Yago Vicente, Minh Hoai, and Dimitris Samaras. Noisy label recovery for shadow detection in unfamiliar domains. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.

- Noam Yair and Tomer Michaeli. Multi-scale weighted nuclear norm image restoration. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Hang Yan, Yebin Liu, and Yasutaka Furukawa. Turning an urban scene video into a cinemagraph. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Ke Yan, Xiaosong Wang, Le Lu, Ling Zhang, Adam P. Harrison, Mohammadhadi Bagheri, and Ronald M. Summers. Deep lesion graphs in the wild: Relationship learning and organization of significant radiology image findings in a diverse large-scale lesion database. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Qingsen Yan, Dong Gong, Qinfeng Shi, Anton van den Hengel, Chunhua Shen, Ian Reid, and Yanning Zhang. Attention-guided network for ghost-free high dynamic range imaging. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hongyu Yang, Di Huang, Yunhong Wang, and Anil K. Jain. Learning face age progression: A pyramid architecture of gans. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Shijie Yang, Liang Li, Shuhui Wang, Weigang Zhang, and Qingming Huang. A graph regularized deep neural network for unsupervised image representation learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Xitong Yang, Xiaodong Yang, Ming-Yu Liu, Fanyi Xiao, Larry S. Davis, and Jan Kautz. Step: Spatio-temporal progressive learning for video action detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zichao Yang, Xiaodong He, Jianfeng Gao, Li Deng, and Alex Smola. Stacked attention networks for image question answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Taiping Yao, Minsi Wang, Bingbing Ni, Huawei Wei, and Xiaokang Yang. Multiple granularity group interaction prediction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Ting Yao, Tao Mei, and Yong Rui. Highlight detection with pairwise deep ranking for first-person video summarization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Ting Yao, Yingwei Pan, Yehao Li, and Tao Mei. Incorporating copying mechanism in image captioning for learning novel objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yuan Yao, Jianqiang Ren, Xuansong Xie, Weidong Liu, Yong-Jin Liu, and Jun Wang. Attention-aware multi-stroke style transfer. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Rajeev Yasarla and Vishal M. Patel. Uncertainty guided multi-scale residual learning-using a cycle spinning cnn for single image de-raining. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hashim Yasin, Umar Iqbal, Bjorn Kruger, Andreas Weber, and Juergen Gall. A dual-source approach for 3d pose estimation from a single image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mark Yatskar, Luke Zettlemoyer, and Ali Farhadi. Situation recognition: Visual semantic role labeling for image understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Mark Yatskar, Vicente Ordonez, Luke Zettlemoyer, and Ali Farhadi. Commonly uncommon: Semantic sparsity in situation recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Jingwen Ye, Yixin Ji, Xinchao Wang, Kairi Ou, Dapeng Tao, and Mingli Song. Student becoming the master: Knowledge amalgamation for joint scene parsing, depth estimation, and more. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jinmian Ye, Linnan Wang, Guangxi Li, Di Chen, Shandian Zhe, Xinqi Chu, and Zenglin Xu. Learning compact recurrent neural networks with block-term tensor decomposition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Qixiang Ye, Tianliang Zhang, Wei Ke, Qiang Qiu, Jie Chen, Guillermo Sapiro, and Baochang Zhang. Self-learning scene-specific pedestrian detectors using a progressive latent model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Adam B. Yedidia, Manel Baradad, Christos Thrampoulidis, William T. Freeman, and Gregory W. Wornell. Using unknown occluders to recover hidden scenes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Raymond A. Yeh, Chen Chen, Teck Yian Lim, Alexander G. Schwing, Mark Hasegawa-Johnson, and Minh N. Do. Semantic image inpainting with deep generative models. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Raymond A. Yeh, Minh N. Do, and Alexander G. Schwing. Unsupervised textual grounding: Linking words to image concepts. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Raymond A. Yeh, Alexander G. Schwing, Jonathan Huang, and Kevin Murphy. Diverse generation for multi-agent sports games. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Florence Yellin, Benjamin D. Haeffele, Sophie Roth, and René Vidal. Multi-cell detection and classification using a generative convolutional model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Donghun Yeo, Jeany Son, Bohyung Han, and Joon Hee Han. Superpixel-based tracking-by-segmentation using markov chains. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Serena Yeung, Olga Russakovsky, Greg Mori, and Li Fei-Fei. End-to-end learning of action detection from frame glimpses in videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Serena Yeung, Vignesh Ramanathan, Olga Russakovsky, Liyue Shen, Greg Mori, and Li Fei-Fei. Learning to learn from noisy web videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Anthony Yezzi, Ganesh Sundaramoorthi, and Minas Benyamin. Pde acceleration for active contours. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Li Yi, Hao Su, Xingwen Guo, and Leonidas J. Guibas. Syncspecnn: Synchronized spectral cnn for 3d shape segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Li Yi, Wang Zhao, He Wang, Minhyuk Sung, and Leonidas J. Guibas. Gspn: Generative shape proposal network for 3d instance segmentation in point cloud. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ran Yi, Yong-Jin Liu, and Yu-Kun Lai. Content-sensitive supervoxels via uniform tessellations on video manifolds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Wang Yifan, Shihao Wu, Hui Huang, Daniel Cohen-Or, and Olga Sorkine-Hornung. Patch-based progressive 3d point set upsampling. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Junho Yim, Donggyu Joo, Jihoon Bae, and Junmo Kim. A gift from knowledge distillation: Fast optimization, network minimization and transfer learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Guojun Yin, Bin Liu, Lu Sheng, Nenghai Yu, Xiaogang Wang, and Jing Shao. Semantics disentangling for text-to-image generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ming Yin, Yi Guo, Junbin Gao, Zhaoshui He, and Shengli Xie. Kernel sparse subspace clustering on symmetric positive definite manifolds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Zhichao Yin and Jianping Shi. Geonet: Unsupervised learning of dense depth, optical flow and camera pose. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Xingde Ying, Heng Guo, Kai Ma, Jian Wu, Zhengxin Weng, and Yefeng Zheng. X2ct-gan: Reconstructing ct from biplanar x-rays with generative adversarial networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tatsuya Yokota and Hidekata Hontani. Simultaneous visual data completion and denoising based on tensor rank and total variation minimization and its primal-dual splitting algorithm. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Tatsuya Yokota, Burak Erem, Seyhmus Guler, Simon K. Warfield, and Hidekata Hontani. Missing slice recovery for tensors using a low-rank model in embedded space. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Masashi Yokozuka, Shuji Oishi, Simon Thompson, and Atsuhiko Banno. Vitamin-e: Visual tracking and mapping with extremely dense feature points. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ryo Yonetani, Kris M. Kitani, and Yoichi Sato. Recognizing micro-actions and reactions from paired egocentric videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Donggeun Yoo and In So Kweon. Learning loss for active learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Jaeyoung Yoo, Sang-ho Lee, and Nojun Kwak. Image restoration by estimating frequency distribution of local patches. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- YoungJoon Yoo, Kimin Yun, Sangdoo Yun, JongHee Hong, Hawook Jeong, and Jin Young Choi. Visual path prediction in complex scenes with crowded moving objects. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- YoungJoon Yoo, Sangdoo Yun, Hyung Jin Chang, Yiannis Demiris, and Jin Young Choi. Variational autoencoded regression: High dimensional regression of visual data on complex manifold. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jae Shin Yoon, Takaaki Shiratori, Shoou-I Yu, and Hyun Soo Park. Self-supervised adaptation of high-fidelity face models for monocular performance tracking. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ryota Yoshihashi, Wen Shao, Rei Kawakami, Shaodi You, Makoto Iida, and Takeshi Naemura. Classification-reconstruction learning for open-set recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Chong You, Daniel P. Robinson, and Rene Vidal. Provable self-representation based outlier detection in a union of subspaces. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.

- Jinjie You, Ancong Wu, Xiang Li, and Wei-Shi Zheng. Top-push video-based person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kaichao You, Mingsheng Long, Zhangjie Cao, Jianmin Wang, and Michael I. Jordan. Universal domain adaptation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Quanzeng You, Zhengyou Zhang, and Jiebo Luo. End-to-end convolutional semantic embeddings. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Aron Yu and Kristen Grauman. Thinking outside the pool: Active training image creation for relative attributes. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Fisher Yu, Vladlen Koltun, and Thomas Funkhouser. Dilated residual networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Qian Yu, Feng Liu, Yi-Zhe Song, Tao Xiang, Timothy M. Hospedales, and Chen-Change Loy. Sketch me that shoe. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Tan Yu, Jingjing Meng, and Junsong Yuan. Multi-view harmonized bilinear network for 3d object recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Jun Yuan, Bingbing Ni, Xiaokang Yang, and Ashraf A. Kassim. Temporal action localization with pyramid of score distribution features. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Shanxin Yuan, Guillermo Garcia-Hernando, Björn Stenger, Gyeongsik Moon, Ju Yong Chang, Kyoung Mu Lee, Pavlo Molchanov, Jan Kautz, Sina Honari, Liuhao Ge, Junsong Yuan, Xinghao Chen, Guijin Wang, Fan Yang, Kai Akiyama, Yang Wu, Qingfu Wan, Meysam Madadi, Sergio Escalera, Shile Li, Dongheui Lee, Iason Oikonomidis, Antonis Argyros, and Tae-Kyun Kim. Depth-based 3d hand pose estimation: From current achievements to future goals. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tongtong Yuan, Weihong Deng, Jian Tang, Yinan Tang, and Binghui Chen. Signal-to-noise ratio: A robust distance metric for deep metric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zehuan Yuan, Jonathan C. Stroud, Tong Lu, and Jia Deng. Temporal action localization by structured maximal sums. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Jae-Seong Yun and Jae-Young Sim. Reflection removal for large-scale 3d point clouds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Sangdoo Yun, Jongwon Choi, Youngjoon Yoo, Kimin Yun, and Jin Young Choi. Action-decision networks for visual tracking with deep reinforcement learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Victor Yurchenko and Victor Lempitsky. Parsing images of overlapping organisms with deep singling-out networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amir Zadeh, Michael Chan, Paul Pu Liang, Edmund Tong, and Louis-Philippe Morency. Social-iq: A question answering benchmark for artificial social intelligence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Alireza Zaeemzadeh, Mohsen Joneidi, Nazanin Rahnavard, and Mubarak Shah. Iterative projection and matching: Finding structure-preserving representatives and its application to computer vision. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Lazaros Zafeiriou, Epameinondas Antonakos, Stefanos Zafeiriou, and Maja Pantic. Joint unsupervised deformable spatio-temporal alignment of sequences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Hasan F. M. Zaki, Faisal Shafait, and Ajmal Mian. Modeling sub-event dynamics in first-person action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amir R. Zamir, Te-Lin Wu, Lin Sun, William B. Shen, Bertram E. Shi, Jitendra Malik, and Silvio Savarese. Feedback networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Amir R. Zamir, Alexander Sax, William Shen, Leonidas J. Guibas, Jitendra Malik, and Silvio Savarese. Taskonomy: Disentangling task transfer learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Andrei Zanfir, Elisabeta Marinoiu, and Cristian Sminchisescu. Monocular 3d pose and shape estimation of multiple people in natural scenes - the importance of multiple scene constraints. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Valentina Zantedeschi, Remi Emonet, and Marc Sebban. Metric learning as convex combinations of local models with generalization guarantees. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Rowan Zellers, Mark Yatskar, Sam Thomson, and Yejin Choi. Neural motifs: Scene graph parsing with global context. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Rowan Zellers, Yonatan Bisk, Ali Farhadi, and Yejin Choi. From recognition to cognition: Visual commonsense reasoning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Oliver Zendel, Katrin Honauer, Markus Murschitz, Martin Humenberger, and Gustavo Fernandez Dominguez. Analyzing computer vision data - the good, the bad and the ugly. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Andy Zeng, Shuran Song, Matthias Niessner, Matthew Fisher, Jianxiong Xiao, and Thomas Funkhouser. 3dmatch: Learning local geometric descriptors from rgb-d reconstructions. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yanhong Zeng, Jianlong Fu, Hongyang Chao, and Baining Guo. Learning pyramid-context encoder network for high-quality image inpainting. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yu Zeng, Huchuan Lu, Lihe Zhang, Mengyang Feng, and Ali Borji. Learning to promote saliency detectors. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Menghua Zhai, Scott Workman, and Nathan Jacobs. Detecting vanishing points using global image context in a non-manhattan world. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Menghua Zhai, Zachary Bessinger, Scott Workman, and Nathan Jacobs. Predicting ground-level scene layout from aerial imagery. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yao Zhai, Jingjing Fu, Yan Lu, and Houqiang Li. Feature selective networks for object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Huangying Zhan, Ravi Garg, Chamara Saroj Weerasekera, Kejie Li, Harsh Agarwal, and Ian Reid. Unsupervised learning of monocular depth estimation and visual odometry with deep feature reconstruction. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Xiaohang Zhan, Xingang Pan, Ziwei Liu, Dahua Lin, and Chen Change Loy. Self-supervised learning via conditional motion propagation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Feihu Zhang, Victor Prisacariu, Ruigang Yang, and Philip H.S. Torr. Ga-net: Guided aggregation net for end-to-end stereo matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Quanshi Zhang, Ruiming Cao, Ying Nian Wu, and Song-Chun Zhu. Mining object parts from cnns via active question-answering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yinda Zhang and Thomas Funkhouser. Deep depth completion of a single rgb-d image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Zizhao Zhang, Fuyong Xing, Xiaoshuang Shi, and Lin Yang. Semicontour: A semi-supervised learning approach for contour detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Chen Zhao, Zhiguo Cao, Chi Li, Xin Li, and Jiaqi Yang. Nm-net: Mining reliable neighbors for robust feature correspondences. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Hao Zhao, Ming Lu, Anbang Yao, Yiwen Guo, Yurong Chen, and Li Zhang. Physics inspired optimization on semantic transfer features: An alternative method for room layout estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Kaili Zhao, Wen-Sheng Chu, and Honggang Zhang. Deep region and multi-label learning for facial action unit detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Kaili Zhao, Wen-Sheng Chu, and Aleix M. Martinez. Learning facial action units from web images with scalable weakly supervised clustering. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Liangli Zhen, Peng Hu, Xu Wang, and Dezhong Peng. Deep supervised cross-modal retrieval. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Liang Zheng, Hengheng Zhang, Shaoyan Sun, Manmohan Chandraker, Yi Yang, and Qi Tian. Person re-identification in the wild. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Wenzhao Zheng, Zhaodong Chen, Jiwen Lu, and Jie Zhou. Hardness-aware deep metric learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yinqiang Zheng and Laurent Kneip. A direct least-squares solution to the pnp problem with unknown focal length. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Yutong Zheng, Dipan K. Pal, and Marios Savvides. Ring loss: Convex feature normalization for face recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tiancheng Zhi, Bernardo R. Pires, Martial Hebert, and Srinivasa G. Narasimhan. Deep material-aware cross-spectral stereo matching. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Tiancheng Zhi, Bernardo R. Pires, Martial Hebert, and Srinivasa G. Narasimhan. Multispectral imaging for fine-grained recognition of powders on complex backgrounds. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Zhao Zhong, Junjie Yan, Wei Wu, Jing Shao, and Cheng-Lin Liu. Practical block-wise neural network architecture generation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.

- Zhun Zhong, Liang Zheng, Donglin Cao, and Shaozi Li. Re-ranking person re-identification with k-reciprocal encoding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zhun Zhong, Liang Zheng, Zhiming Luo, Shaozi Li, and Yi Yang. Invariance matters: Exemplar memory for domain adaptive person re-identification. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Tinghui Zhou, Philipp Krahenbuhl, Mathieu Aubry, Qixing Huang, and Alexei A. Efros. Learning dense correspondence via 3d-guided cycle consistency. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Xingyi Zhou, Jiacheng Zhuo, and Philipp Krahenbuhl. Bottom-up object detection by grouping extreme and center points. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yanzhao Zhou, Qixiang Ye, Qiang Qiu, and Jianbin Jiao. Oriented response networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Yizhou Zhou, Xiaoyan Sun, Zheng-Jun Zha, and Wenjun Zeng. Mict: Mixed 3d/2d convolutional tube for human action recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Xiangyu Zhu, Zhen Lei, Xiaoming Liu, Hailin Shi, and Stan Z. Li. Face alignment across large poses: A 3d solution. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Xinge Zhu, Jiangmiao Pang, Ceyuan Yang, Jianping Shi, and Dahua Lin. Adapting object detectors via selective cross-domain alignment. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Yuke Zhu, Joseph J. Lim, and Li Fei-Fei. Knowledge acquisition for visual question answering via iterative querying. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Zheng Zhu, Wei Wu, Wei Zou, and Junjie Yan. End-to-end flow correlation tracking with spatial-temporal attention. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Bohan Zhuang, Guosheng Lin, Chunhua Shen, and Ian Reid. Fast training of triplet-based deep binary embedding networks. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- Bohan Zhuang, Lingqiao Liu, Yao Li, Chunhua Shen, and Ian Reid. Attend in groups: A weakly-supervised deep learning framework for learning from web data. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Bohan Zhuang, Qi Wu, Chunhua Shen, Ian Reid, and Anton van den Hengel. Parallel attention: A unified framework for visual object discovery through dialogs and queries. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Bohan Zhuang, Chunhua Shen, Minghui Tan, Lingqiao Liu, and Ian Reid. Structured binary neural networks for accurate image classification and semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Dimitri Zhukov, Jean-Baptiste Alayrac, Ramazan Gokberk Cinbis, David Fouhey, Ivan Laptev, and Josef Sivic. Cross-task weakly supervised learning from instructional videos. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Junbao Zhuo, Shuhui Wang, Shuhao Cui, and Qingming Huang. Unsupervised open domain recognition by semantic discrepancy minimization. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.

- Wei Zhuo, Mathieu Salzmann, Xuming He, and Miaomiao Liu. Indoor scene parsing with instance segmentation, semantic labeling and support relationship inference. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Magauiya Zhussip, Shakarim Soltanayev, and Se Young Chun. Training deep learning based image denoisers from undersampled measurements without ground truth and without image prior. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Ev Zisselman, Jeremias Sulam, and Michael Elad. A local block coordinate descent algorithm for the csc model. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Aleksandar Zlateski, Ronnachai Jaroensri, Prafull Sharma, and Frédo Durand. On the importance of label quality for semantic segmentation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Barret Zoph, Vijay Vasudevan, Jonathon Shlens, and Quoc V. Le. Learning transferable architectures for scalable image recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Chuhang Zou, Alex Colburn, Qi Shan, and Derek Hoiem. Layoutnet: Reconstructing the 3d room layout from a single rgb image. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Fangyu Zou, Li Shen, Zequn Jie, Weizhong Zhang, and Wei Liu. A sufficient condition for convergences of adam and rmsprop. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Silvia Zuffi, Angjoo Kanazawa, David W. Jacobs, and Michael J. Black. 3d menagerie: Modeling the 3d shape and pose of animals. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- Silvia Zuffi, Angjoo Kanazawa, and Michael J. Black. Lions and tigers and bears: Capturing non-rigid, 3d, articulated shape from images. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Syed Zulqarnain Gilani and Ajmal Mian. Learning from millions of 3d scans for large-scale 3d face recognition. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018.
- Yiming Zuo, Weichao Qiu, Lingxi Xie, Fangwei Zhong, Yizhou Wang, and Alan L. Yuille. Craves: Controlling robotic arm with a vision-based economic system. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Shay Zweig and Lior Wolf. Interponet, a brain inspired neural network for optical flow dense interpolation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.