Jonghyun Choi

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Google Scholar Page | Semantic Scholar Page | DBLP

Research Interest

Computer Vision and **Machine Learning**: Efficient visual recognition model/algorithm/system in terms of computational complexity of training/inference, cost and power without much sacrifice of accuracy.

Education

University of Maryland, College Park (MD, USA)
Ph.D., Electrical and Computer Engineering, May 21, 2015
  – Advisor: Prof. Larry S. Davis (Computer Vision)
  ◇ UMD ECE distinguished Ph.D. dissertation fellowship 2015

Seoul National University (Seoul, South Korea)
M.S., Electrical Engineering and Computer Science, Aug. 2008
  – Advisor: Prof. Kyoung-Mu Lee (Computer Vision)

B.S., Electrical Engineering, Feb. 2003
  – Thesis Advisor: Prof. Jin Young Choi (Computer Vision)

Employment

✓ Assistant Professor, **GIST AI GS/EECS**, Gwangju, Korea. Aug 2018 - Present
✓ Affiliated Research Scientist, **Allen Institute for Artificial Intelligence (AI2)**, Seattle, WA. Aug 2018 - Present
Research Scientist, **Allen Institute for Artificial Intelligence (AI2)**, Seattle, WA. May 2016 - July 2018
Senior Researcher, **Comcast Applied Artificial Intelligence Research**, Washington, DC, April 2015 - May 2016
Research Intern, **Microsoft Research**, Redmond, WA. June 2014 - Sept. 2014
Research Intern, **Disney Research**, Pittsburgh, PA. March 2014 - June 2014
Research Intern, **Adobe Research**, San Jose, CA. May 2013 - Sept. 2013
Research Intern, **US Army Research Lab**, Adelphi, MD. May 2011 - Aug. 2011
Research Engineer, **Intel Korea** (Formerly, Olaworks Inc.), Seoul, Korea. Aug. 2008 - Aug. 2009
Engineer, **D-Gate Co.,Ltd.**, Seoul, Korea. Jan. 2003 - March 2006 (Alternative military service)

Publications

arXiv Preprints

3. Learning Architectures for Binary Networks
   Dahyun Kim*, Kunal Pratap Singh*, **Jonghyun Choi**
   arXiv Preprint 2002.06963 Link

2. ScreenerNet: Learning Self-Paced Curriculum for Deep Neural Networks
   Tae-Hoon Kim, **Jonghyun Choi**
   arXiv Preprint 1801.00904 Link

1. Comparing Apples to Apples in the evaluation of binary coding methods
   Mohammad Rastegari, Shobeir Fakhraei, **Jonghyun Choi**, David W. Jacobs and Larry S. Davis
   arXiv Preprint 1405.1005 Link

In conference proceedings and journals

21. Learning to Super Resolve Intensity Images from Events
    S. Mohammad Mostafavi I., **Jonghyun Choi**, Kuk-Jin Yoon
    IEEE/CVF **CVPR** 2020 **[Oral]** Link

20. Structured Set Matching Networks for One-Shot Part Labeling
    Jonghyun Choi, Jayant Krishnamurthy, Aniruddha Kembhavi, Ali Farhadi
    IEEE/CVF **CVPR** 2018 **[Spotlight]** Link

19. ActionFlowNet: Learning Motion Representation for Action Recognition
    Joe Yue-Hei Ng, **Jonghyun Choi**, Jan Neumann, Larry S. Davis
    IEEE/CVF **WACV** 2018 **[Oral]** Link

18. Are You Smarter Than A Sixth Grader? Textbook Question Answering for Multimodal Machine Comprehension
Aniruddha Kembhavi, Minjoon Seo, Dustin Schwenk, **Jonghyun Choi**, Ali Farhadi, Hannaneh Hajishirzi
IEEE/CVF **CVPR** 2017 **[Spotlight]** Link

17. Learning Temporal Regularity in Video Sequences
Mahmudul Hasan, **Jonghyun Choi**, Jan Neumann, Amit K. Roy-Chowdhury, Larry S. Davis
IEEE/CVF **CVPR** 2016 Link

16. Mining Discriminative Triplets of Patches for Fine-Grained Classification
Yaming Wang, **Jonghyun Choi**, Vlad I. Morariu, Larry S. Davis
IEEE/CVF **CVPR** 2016 Link

15. Knowledge Transfer with Interactive Learning of Semantic Relationships
Jonghyun Choi, Sung Ju Hwang, Leonid Sigal and Larry S. Davis
AAAI 2016 **[Oral]** Link
ICML Workshop on Active Learning (ALW) 2015 Link

14. Collective Image Categorization and Labeling by Matrix Factorization
Seunghoon Hong, **Jonghyun Choi**, Jan Feyereisl, Bohyung Han and Larry S. Davis
IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**) 2016 Link

13. Multi-Directional Multi-Level Dual-Cross Patterns for Robust Face Recognition
Changxing Ding, **Jonghyun Choi**, Dacheng Tao, Larry S. Davis
IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**) 2016 Link

12. Cross-modal thermal-to-visible face recognition using partial least squares regression
Shuowen Hu, **Jonghyun Choi**, Alex L. Chan and William Robson Schwartz
Journal of the Optical Society of America A (JOSA-A) 2015 Link, Journal Spotlight

11. Towards sparse coding on cosine distance
Jonghyun Choi, Hyunjong Cho, Jungsuk Kwac and Larry S. Davis
ICPR 2014 **[Oral]** Link

10. Predictable Dual-View Hashing
Mohammad Rastegari, **Jonghyun Choi**, Shobeir Fakhraei, Hal Daumé III and Larry S. Davis
ICML 2013 Link

9. Adding Unlabeled Samples to Categories by Learned Attributes
Jonghyun Choi, Mohammad Rastegari, Ali Farhadi and Larry S. Davis
IEEE/CVF **CVPR** 2013 Link
IEEE/CVF **CVPR** Workshop on Scene Understanding (SUNw) 2013 (Invited) Link

8. Data insufficiency in Sketch Versus Face Recognition
Jonghyun Choi, Abhishek Sharma, David W. Jacobs, and Larry S. Davis
IEEE/CVF **CVPR** Workhop on Biometrics 2012. **[Oral]** Link

7. Face Verification Using Sparse Representation
Huimin Guo, Ruiping Wang, **Jonghyun Choi**, and Larry S. Davis
IEEE/CVF **CVPR** Workshop on Biometrics 2012. **[Short Oral]** Link

6. Thermal to Visible Face Recognition
Jonghyun Choi, Shuowen Hu, S. Susan Young, and Larry S. Davis
SPIE Conference on Defense, Securities, and Sensor (DSS) 2012 **[Oral]**. Link

5. Robust Pose Invariant Face Recognition using Coupled Latent Space Discriminant Analysis
Abhishek Sharma, Murad Al Haj, **Jonghyun Choi**, Larry S. Davis, and David W. Jacobs
Computer Vision and Image Understanding (**CVIU**) 2012 Link

4. Face Identification Using Large Feature Sets
William R. Schwartz, Huimin Guo, **Jonghyun Choi** and Larry S Davis
IEEE Transactions on Image Processing (**TIP**) 2012 Link

3. A Complementary Local Feature Descriptor for Face Identification
Jonghyun Choi, William R. Schwartz, Huimin Guo, and Larry S Davis
IEEE/CVF **WACV** 2012. **[Full Oral]** Link

2. Accurate Stereo Matching using Pixel Response Function
Jonghyun Choi and Kyoung Mu Lee
Workshop on Image Processing and Image Understanding (IPIU) 2008 Link

1. An Efficient Trinocular Rectification Method for Stereo Matching
Young-Ki Baik, **Jonghyun Choi** and Kyoung Mu Lee
Korea-Japan Joint Workshop on Frontiers of Computer Vision (FCV) 2007. (Sponsored by IEEE) Link

Theses

- Recognizing Visual Categories by Commonality and Diversity
  Ph.D. Thesis. (Advisor: Prof. Larry S. Davis) University of Maryland, College Park. 2015 Link
  ⋄ UMD ECE distinguished Ph.D. dissertation fellowship 2015

- Radiometric Compensation using the Relative Radiometric Response Function
  Master's Thesis. (Advisor: Prof. Kyoung-Mu Lee) Graduate School, Seoul National University 2008

- Vision Based Traffic Analyzer
  Bacholor's Thesis. (Thesis Advisor: Prof. Jin-Young Choi) Seoul National University 2003
  ⋄ SNU EE Exhibition - Encouragement Award 2002

Professional Services

- **Organizer**
  – CVPR 2017 Workshop on Visual Understanding Across Modality (Charades Challenge)
- **Area Chair or Senior Program Committee**
  – WACV 2020
- **Reviewer or Program Committee**
  – CVPR 2015, 2018-2020
    ○ CVPR Workshop on Learning from Unlabeled Videos (LUV) 2019-2020
  – ICCV 2017, 2019
  – ECCV 2020
  – ACCV 2014, 2016, 2018
  – WACV 2017, 2018, 2019
  – IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) 2013, 2018, 2020
  – International Journal of Computer Vision (IJCV) 2018
  – IEEE Transactions on Image Processing (TIP) 2014-2018
  – Computer Vision and Image Understanding (CVIU) 2012, 2014, 2018
  – IEEE Transactions on Circuits and Systems for Video Technology (TCSVT) 2014, 2017, 2018
  – Pattern Recognition 2014, 2018
  – Springer Journal of Signal, Image and Video Processing (SIVP) 2013
  – IEEE Transactions on Information Forensics and Security (TIFS) 2013, 2018
  – IEEE Transactions on Aerospace and Electronic Systems (TAES) 2012-2013
  – IEEE Access 2018

Awards, Honors and Scholarship

- Samsung Humantech Paper Award
  – **Bronze Prize** (as an advisor) 2020 (26th)
  – **Gold Prize (First Place)** 2014 (20th)
- **Winner**, Distinguished Dissertation Fellowship, Department of Electrical and Computer Engineering, University of Maryland (March 2015)
- **Graduate Scholarship**, 2014 Korean Scientist and Engineers Association (KSEA) Scholarship (Aug. 2014)
- **First Place Scholarship**, 2013 Moon-Jung Chung Scholarship, Korean Computer Scientists and Engineers Association in America (KOCSEA) (Dec. 2013)
- **Best Presentation Award**, UMD KGSA-KSEA Annual Symposium (Mar. 2013)
- **Summer Research Fellowship**, Graduate School, University of Maryland *(one of 47/10,805)* (May–Aug. 2012)
- **Nurturing Graduate Student Scholarship**, Samsung Electronics (Jan. 2007–Aug. 2008)
- **Research Graduate Student Scholarship**, Korea Science Foundation (KSF) (Mar. 2007–Feb. 2008)
- **SNU EE-Alumni Scholarship for Graduate Study**, SNU EE-Alumni Association (Sept. 2007–Feb. 2008)

Patent

Method and device for neural architecture search optimized for binary neural network
Dahyun Kim, Kunal Pratap Singh and **Jonghyun Choi**
○ *Korean Patent Application, 2020 (10-2020-0021738).*

Object Classification Through Semantic Mapping
Sung Ju Hwang, **Jonghyun Choi** and Leonid Sigal
- ○ *US Patent Registered, 2017 (9,740,964).*

Unsupervised Initialization Method of Graph-Cut Algorithm for Human Segmentation
Jonghyun Choi and Tae-hoon Kim
- ○ *Korean Patent Registered, 2010 (10-0967379).*

Reference will be provided upon request.