

# Jonghyun Choi

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[Google Scholar](#) · [Semantic Scholar](#) · [DBLP](#)

## Research Interest

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**Building a practical multi-modal perception system** using computer vision and machine learning, particularly efficient in labeling cost and computational complexity of training and inference.

## Employment

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✓ Associate Professor, <b>Yonsei University, Department of AI/CS</b> , Seoul, South Korea	Mar. 2022 - Present
✓ Adjunct Professor, <b>POSTECH, Graduate School of AI</b> , Pohang, South Korea	Sept. 2022 - Present
✓ Affiliated Research Scientist, <b>Allen Institute for Artificial Intelligence (AI2)</b> , Seattle, WA	Aug. 2018 - Present
• Assistant Professor, <b>GIST AI GS/EECS</b> , Gwangju, South Korea	Aug. 2018 - Feb. 2022
• Research Scientist, <b>Allen Institute for Artificial Intelligence (AI2)</b> , Seattle, WA	May 2016 - July 2018
• Senior Researcher, <b>Comcast Applied Artificial Intelligence Research</b> , Washington, DC	April 2015 - May 2016
• Graduate Research Assistant, <b>UMIACS, University of Maryland</b> , College Park, MD	May 2010 - April. 2015
• Research Intern, <b>Microsoft Research</b> , Redmond, WA	June 2014 - Sept. 2014
• Research Intern, <b>Disney Research</b> , Pittsburgh, PA	March 2014 - June 2014
• Research Intern, <b>Adobe Research</b> , San Jose, CA	May 2013 - Sept. 2013
• Research Intern, <b>US Army Research Lab</b> , Adelphi, MD	May 2011 - Aug. 2011
• Research Engineer, <b>Olaworks Inc.</b> (now, Intel Korea), Seoul, South Korea	Aug. 2008 - Aug. 2009
• Engineer, <b>D-Gate Co.,Ltd.</b> , Seoul, South Korea (Alternative military service)	Jan. 2003 - March 2006

## Education

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### University of Maryland, College Park (MD, USA)

Ph.D., Electrical and Computer Engineering	May 2015
– Advisor: Prof. Larry S. Davis (Computer Vision)	
◇ <b>UMD ECE distinguished Ph.D. dissertation fellowship 2015</b>	

### 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)	

## Publications

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✓ My name in bold underline denotes main author (*i.e.*, first or corresponding author).

### In conference proceedings and journals

42. Context-Aware Planning and Environment-Aware Memory for Instruction Following Embodied Agents  
Byeonghwi Kim, Jinyeon Kim, Yuyeong Kim, Cheolhong Min, Jonghyun Choi  
**ICCV 2023** [Link](#) / **2023 CVPR Embodied AI Challenge - 1st place winner** [Link](#)
41. Story Visualization by Online Text Augmentation with Context Memory  
Daechul Ahn, Daneul Kim, Gwangmo Song, Seung Hwan Kim, Honglak Lee, Dongyeop Kang, Jonghyun Choi  
**ICCV 2023** [Link](#)
40. Online Continual Learning on Hierarchical Label Expansion  
Byung Hyun Lee, Okchul Jung, Jonghyun Choi, Se Young Chun  
**ICCV 2023** [Link](#)
39. Cost-effective On-device Continual Learning over Memory Hierarchy with Miro  
Xinyue Ma, Suyeon Jeong, Minjia Zhang, Di Wang, Jonghyun Choi, Myeongjae Jeon  
**MobiCom 2023** (**Oral**) [Link](#)
38. Online Boundary-Free Continual Learning by Scheduled Data Prior  
Hyunseo Koh, Minhyuk Seo, Jihwan Bang, Hwanjun Song, Deokki Hong, Seulki Park, Jung-Woo Ha, Jonghyun Choi  
**ICLR 2023** [Link](#)

37. Multi-level Compositional Reasoning for Interactive Instruction Following  
Suvaansh Bhambri\*, Byeonghwi Kim\*, Jonghyun Choi  
**AAAI 2023** (Oral) [Link](#)
36. Learning visual representations for transfer learning by suppressing texture  
Shlok Mishra, Anshul Shah, Ankan Bansal, Janit Anjaria, Jonghyun Choi, Abhinav Shrivastava, Abhishek Sharma, David Jacobs  
**BMVC 2022** [Link](#)
35. Ask4Help: Learning to Leverage an Expert for Embodied Tasks  
Kunal Pratap Singh, Luca Weihs, Alvaro Herrasti, Jonghyun Choi, Aniruddha Kembhavi, Roozbeh Mottaghi  
**NeurIPS 2022** [Link](#)
34. CarM: Rethinking the Design of Episodic Memory for Continual Learning  
Soobee Lee, Minindu Weerakoon, Jonghyun Choi, Minjia Zhang, Di Wang, Myeongjae Jeon  
**DAC 2022** [Link](#)
33. Unsupervised Representation Learning for Binary Networks by Joint Classifier Training  
Dahyun Kim, Jonghyun Choi  
**CVPR 2022** [Link](#)
32. Online Continual Learning on a Contaminated Data Stream with Blurry Task Boundaries  
Jihwan Bang, Hyunseo Koh, Seulki Park, Hwanjun Song, Jung-Woo Ha, Jonghyun Choi  
**CVPR 2022** [Link](#)
31. Stereo Depth from Events Cameras: Concentrate and Focus on the Future  
YeongWoo Nam, Mohammad Mostafavi, Kuk-Jin Yoon, Jonghyun Choi  
**CVPR 2022** [Link](#)
30. Attentive Fine-Grained Structured Sparsity for Image Restoration  
Junghun Oh, Heewon Kim, Seungjun Nah, Cheeun Hong, Jonghyun Choi, Kyoung Mu Lee  
**CVPR 2022** [Link](#)
29. Online Continual Learning on Class Incremental Blurry Task Configuration with Anytime Inference  
Hyunseo Koh\*, Dahyun Kim\*, Jung-Woo Ha and Jonghyun Choi  
**ICLR 2022** [Link](#)
28. Unsupervised Domain Adaptation for 3D Point Clouds by Searched Transformations  
Dongmin Kang, Yeongwoo Nam, Daeun Kyung, Jonghyun Choi  
**IEEE Access 2022** [Link](#)
27. Iconary: A Pictionary-based Game for Testing Multimodal Communication with Drawings and Text  
Christopher Clark, Jordi Salvador, Dustin Schwenk, Derrick Bonafilia, Mark Yatskar, Eric Kolve, Alvaro Herrasti, Jonghyun Choi, Sachin Mehta, Sam Skjonsberg, Carissa Schoenick, Aaron Sarnat, Hannaneh Hajishirzi, Aniruddha Kembhavi, Oren Etzioni and Ali Farhadi  
**EMNLP 2021** (Long) (Oral) [Link](#)
26. Zero-Shot Natural Language Video Localization  
Jinwoo Nam, Daechul Ahn, Dongyeop Kang, Seong Jong Ha, Jonghyun Choi  
**ICCV 2021** (Oral) (Acceptance ratio: 3.4%) [Link](#)
25. Rethinking Deep Image Prior for Denoising  
Yeonsik Jo, Se Young Chun, Jonghyun Choi  
**ICCV 2021** [Link](#)
24. Event-Intensity Stereo: Estimating Depth by the Best of Both Worlds  
S. Mohammad Mostafavi I., Kuk-Jin Yoon, Jonghyun Choi  
**ICCV 2021** [Link](#) / **2021 CVPR Event Vision Workshop Challenge - 1st place winner** [Link](#)
23. Factorizing Perception and Policy for Interactive Instruction Following  
Kunal Pratap Singh\*, Suvaansh Bhambri\*, Byeonghwi Kim\*, Roozbeh Mottaghi, Jonghyun Choi  
**ICCV 2021** [Link](#) / **2021 CVPR Embodied Vision Workshop Challenge - 2nd place winner** [Link](#)
22. E2SRI: Learning to Super-Resolve Intensity Images from Events  
S. Mohammad Mostafavi I., Yeong-oo Nam, Jonghyun Choi, Kuk-Jin Yoon  
**IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) 2021** [Link](#)
21. Rainbow Memory: Continual Learning with a Memory of Diverse Samples  
Jihwan Bang\*, Heesu Kim\*, Youngjoon Yoo, Jung-Woo Ha, Jonghyun Choi  
**CVPR 2021** [Link](#)
20. Acceleration of Semiconductor Device Simulation with Approximate Solutions Predicted by Trained Neural Networks  
Seung-Cheol Han, Jonghyun Choi, Sung-Min Hong  
**IEEE Transactions on Electron Devices 2021** [Link](#)
19. Learning Architectures for Binary Networks  
Dahyun Kim\*, Kunal Pratap Singh\*, Jonghyun Choi  
**ECCV 2020** [Link](#)

18. Learning to Super Resolve Intensity Images from Events  
S. Mohammad Mostafavi I., Jonghyun Choi, Kuk-Jin Yoon  
**CVPR 2020 (Oral)** [Link](#)
17. Confidence Calibration for Incremental Learning  
Dongmin Kang, Yeonsik Jo, Yeongwoo Nam, Jonghyun Choi  
IEEE Access 2020 [Link](#)
16. Structured Set Matching Networks for One-Shot Part Labeling  
Jonghyun Choi, Jayant Krishnamurthy, Aniruddha Kembhavi, Ali Farhadi  
**CVPR 2018 (Spotlight)** [Link](#)
15. ActionFlowNet: Learning Motion Representation for Action Recognition  
Joe Yue-Hei Ng, Jonghyun Choi, Jan Neumann, Larry S. Davis  
**WACV 2018 (Oral)** [Link](#)
14. 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  
**CVPR 2017 (Spotlight)** [Link](#)
13. Learning Temporal Regularity in Video Sequences  
Mahmudul Hasan, Jonghyun Choi<sup>CA</sup>, Jan Neumann, Amit K. Roy-Chowdhury, Larry S. Davis  
**CVPR 2016** [Link](#)
12. Mining Discriminative Triplets of Patches for Fine-Grained Classification  
Yaming Wang, Jonghyun Choi<sup>CA</sup>, Vlad I. Morariu, Larry S. Davis  
**CVPR 2016** [Link](#)
11. 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](#)
10. 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](#)
9. 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](#)
8. 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](#)
7. Towards sparse coding on cosine distance  
Jonghyun Choi, Hyunjong Cho, Jungsuk Kwac and Larry S. Davis  
**ICPR 2014 (Oral)** [Link](#)
6. Predictable Dual-View Hashing  
Mohammad Rastegari, Jonghyun Choi, Shobeir Fakhraei, Hal Daumé III and Larry S. Davis  
**ICML 2013** [Link](#)
5. Adding Unlabeled Samples to Categories by Learned Attributes  
Jonghyun Choi, Mohammad Rastegari, Ali Farhadi and Larry S. Davis  
**CVPR 2013** [Link](#)  
**CVPR Workshop on Scene Understanding (SUNw) 2013 (Invited)** [Link](#)
4. 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](#)
3. 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](#)
2. 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](#)
1. A Complementary Local Feature Descriptor for Face Identification  
Jonghyun Choi, William R. Schwartz, Huimin Guo, and Larry S Davis  
**WACV 2012. (Full Oral)** [Link](#)

### In workshop proceedings

4. ME<sub>ns</sub>A: Mix-up Ensemble Average for Unsupervised Multi Target Domain Adaptation on 3D Point Clouds  
Ashish Sinha, Jonghyun Choi  
CVPR 2023 Workshop on Continual Learning. [Link](#)
3. Language Guided Meta-Control for Embodied Instruction Following  
Divyam Goel, Kunal Pratap Singh, Jonghyun Choi  
CVPR 2022 Workshop - Embodied AI Workshop. [Link](#)
2. Data insufficiency in Sketch Versus Face Recognition  
Jonghyun Choi, Abhishek Sharma, David W. Jacobs, and Larry S. Davis  
CVPR 2012 Workshop on Biometrics. (Oral) [Link](#)
1. Face Verification Using Sparse Representation  
Huimin Guo, Ruiping Wang, Jonghyun Choi, and Larry S. Davis  
CVPR 2012 Workshop on Biometrics. (Short Oral) [Link](#)

### Non-peer reviewed arXiv preprints

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](#)

### 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 [Link](#)
- Vision Based Traffic Analyzer  
Bachelor's Thesis. (Thesis Advisor: Prof. Jin-Young Choi) Seoul National University 2003 [Link](#)  
◇ SNU EE Exhibition - Encouragement Award 2002

### Professional Services

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- **Organizer**
  - CoLLAs 2023 Review Process Chair
  - ACCV 2022 Industry Chair
  - CVPR 2017 Workshop on Visual Understanding Across Modality (Charades Challenge)
- **Area Chair or Senior Program Committee**
  - CVPR 2023-2024
  - NeurIPS 2023 (Main, D&B Track)
  - BMVC 2023
  - AAAI 2022-2024
  - WACV 2020-2024
- **Reviewer or Program Committee**
  - CVPR 2015, 2018-2022
  - ICCV 2017-2022
  - ECCV 2020-2022
  - NeurIPS 2020-2022
  - ICLR 2022-2023
  - ICML 2021-2023
  - AAAI 2019-2021
  - BMVC 2022
  - ACCV 2014-2020
  - WACV 2017-2019
  - 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 2018-2020
- **Local Service (Chairs/President selected)**
  - Program Chair, KCCV 2023
  - President, CVPR research society, KIISE, 2023-Present

## Awards, Honors and Scholarship

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- **1<sup>st</sup> Place Winner**, Visual Continual Learning Workshop – SHIFT Challenge 2023 - Continuous Test-time Adaptation for Object Detection at ICCV 2023 Oct. 2023
- **1<sup>st</sup> Place Winner**, Embodied AI workshop – Generalist Language Grounding Agents Challenge at CVPR 2023 June 2023
- **Outstanding CVPR researcher**, Korean Institute of Information Scientists and Engineers (KIISE) Dec. 2022
- **1<sup>st</sup> Place Winner**, Event vision challenge at CVPR 2021 June 2021
- **2<sup>nd</sup> Place Winner**, Embodied AI workshop – ‘ALFRED’ challenge at CVPR 2021 June 2021
- Samsung Humantech Paper Award
  - **Bronze Prize** (as an advisor) (26<sup>th</sup>) 2020
  - **Gold Prize** (First place) (20<sup>th</sup>) 2014
- **2<sup>nd</sup> Place Winner**, Embodied Vision, Actions & Language (EVAL) Workshop at ECCV 2020 Aug. 2020
- **Distinguished Dissertation Fellowship**, Department of ECE, University of Maryland March 2015
- **Summer Research Fellowship**, Graduate School, University of Maryland (47/10,805) May-Aug. 2012
- **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

Reference will be provided upon request.