Jonghyun Choi

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Google Scholar · Semantic Scholar · DBLP

Research Interest

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

Employment

✓ Associate Professor, **Yonsei University, Department of AI/CS**, Seoul, South Korea	Mar. 2022 - Present
✓ Adjuct Professor, **POSTECH, Graduate School of AI**, Pohang, South Korea	Sept. 2022 - Present
✓ Affiliated Research Scientist, **Allen Institute for Artificial Intelligence (AI2)**, Seattle, WA	Aug. 2018 - Present
• Assistant Professor, **GIST AI GS/EECS**, Gwangju, South Korea	Aug. 2018 - Feb. 2022
• 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
• Graduate Research Assistant, **UMIACS, University of Maryland**, College Park, MD	May 2010 - April. 2015
• 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, **Olaworks Inc.** (now, Intel Korea), Seoul, South Korea	Aug. 2008 - Aug. 2009
• Engineer, **D-Gate Co.,Ltd.**, Seoul, South Korea (Alternative military service)	Jan. 2003 - March 2006

Education

University of Maryland, College Park (MD, USA)
Ph.D., Electrical and Computer Engineering — May 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)

Publications

✓ **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**[CA], 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**[CA], 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. MEnsA: Mix-up Ensemble Average for Unsupervised Multi Target Domain Adaptation on 3D Point Clouds
   Ashish Sinha, **Jonghyun Choi**
   CVPR Workshop on Continual Learning 2023. Link
3. Language Guided Meta-Control for Embodied Instruction Following
   Divyam Goel, Kunal Pratap Singh, **Jonghyun Choi**
   CVPR Workshop - Embodied AI Workshop 2022. Link
2. Data insufficiency in Sketch Versus Face Recognition
   Jonghyun Choi, Abhishek Sharma, David W. Jacobs, and Larry S. Davis
   CVPR Workshop on Biometrics 2012. **(Oral)** Link
1. Face Verification Using Sparse Representation
   Huimin Guo, Ruiping Wang, **Jonghyun Choi**, and Larry S. Davis
   CVPR Workshop on Biometrics 2012. **(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
  Bacholor's Thesis. (Thesis Advisor: Prof. Jin-Young Choi) Seoul National University 2003 Link
  ◇ SNU EE Exhibition - Encouragement Award 2002

Professional Services

- **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

- **1st Place Winner**, Visual Continual Learning Workshop – SHIFT Challenge 2023 - Continuous Test-time Adaptation for Object Detection at ICCV 2023 Oct. 2023
- **1st 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
- **1st Place Winner**, Event vision challenge at CVPR 2021 June 2021
- **2nd Place Winner**, Embodied AI workshop – 'ALFRED' challenge at CVPR 2021 June 2021
- Samsung Humantech Paper Award
  - **Bronze Prize** (as an advisor) (26th) 2020
  - **Gold Prize** (First place) (20th) 2014
- **2nd 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.