# 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 ($26^{th}$)
  - **Gold Prize (First Place)** 2014 ($20^{th}$)
- **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.