

# Junhyug Noh

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## RESEARCH INTERESTS

Object detection and its related high-level vision tasks  
(e.g. semantic/instance segmentation, scene understanding, and image captioning)

## EDUCATION

**Seoul National University**, Seoul, Korea Mar 2015 – Feb 2020

- Ph.D. in Computer Science and Engineering
- Thesis: Improving Object Detection in Hard Conditions of Scale, Occlusion and Label
- Advisor: Prof. Gunhee Kim
- Total GPA: 4.08 / 4.3

**Seoul National University**, Seoul, Korea Mar 2013 – Feb 2015

- M.S. in Computer Science and Engineering
- Thesis: Machine Learning Models and Missing Data Imputation Methods in Predicting the Progression of IgA Nephropathy
- Advisor: Prof. Robert Ian McKay
- Total GPA: 4.24 / 4.3

**Indiana University**, Bloomington, Indiana, USA Aug 2008 – Jan 2009

- Intensive English Program (IEP)

**Seoul National University**, Seoul, Korea Mar 2005 – Feb 2013

- B.S. in Computer Science and Engineering
- B.S. in Statistics (Double Major)
- Thesis: Prediction of Customer's Follow-on Purchase using Ensemble Methods
- Total GPA: 3.57 / 4.3

## RESEARCH EXPERIENCE

**Vision and Learning Lab.**, Seoul National University Mar 2020 – Current

- Postdoctoral Researcher
  - Advisor: Prof. Gunhee Kim
  - Projects: Computer Vision (Weakly Supervised Object Localization, etc.), Medical AI

**Vision and Learning Lab.**, Seoul National University Mar 2015 – Feb 2020

- Graduate Research Assistant
  - Advisor: Prof. Gunhee Kim
  - Projects: Computer Vision (Object Detection, Semantic Segmentation, etc.), Medical AI

**Medical Research Center for Innovation**, Seoul National University Hospital Jan 2016 – Aug 2016

- Visiting Researcher
  - Advisor: Prof. Yon Su Kim
  - Projects: Medical AI

**Structural Complexity Lab.**, Seoul National University Mar 2013 – Feb 2015

- Graduate Research Assistant
  - Advisor: Prof. Robert Ian McKay
  - Projects: Genetic Algorithm, Medical AI

## PUBLICATIONS

**PEER-REVIEWED** (Conferences / Journals, \*Equal contribution)

- [11] **Junhyug Noh\***, Wonho Bae\*, and Gunhee Kim. “*Rethinking Class Activation Mapping for Weakly Supervised Object Localization.*” European Conference on Computer Vision (**ECCV 2020**). Glasgow, Sweden (Online), Aug 2020.
- [10] **Junhyug Noh\***, Kyung Don Yoo\*, Wonho Bae, Jong Soo Lee, Kangil Kim, Jang-Hee Cho, Hajeong Lee, Dong Ki Kim, Chun Soo Lim, Shin-Wook Kang, Yong-Lim Kim, Yon Su Kim, Gunhee Kim, and Jung Pyo Lee. “*Prediction of the Mortality Risk in Peritoneal Dialysis Patients using Machine Learning Models: A Nation-wide Prospective Cohort in Korea.*” Scientific Reports, vol. 10, no. 1, pp. 1–11, May 2020. (**SCI**)

- [9] **Junhyug Noh**, Wonho Bae, Wonhee Lee, Jinhwan Seo, and Gunhee Kim. “*Better to Follow, Follow to Be Better: Towards Precise Supervision of Feature Super-Resolution for Small Object Detection.*” International Conference on Computer Vision (**ICCV 2019**). Seoul, Korea, Nov 2019.
- [8] Kangil Kim, Dong-Kyun Kim, **Junhyug Noh**, and Minhyeok Kim. “*Stable Forecasting of Environmental Time Series via Long Short Term Memory Recurrent Neural Network.*” IEEE Access, vol. 6, no. 1, pp. 75216–75228, Dec 2018. (**SCI**)
- [7] Kangil Kim, **Junhyug Noh**, Dong-Kyun Kim, and Minhyeok Kim. “*Conflict Relaxation of Activation-Based Regularization for Neural Network.*” IEEE Access, vol. 6, no. 1, pp. 52510–52518, Sep 2018. (**SCI**)
- [6] **Junhyug Noh**, Soochan Lee, Beomsu Kim, and Gunhee Kim. “*Improving Occlusion and Hard Negative Handling for Single-Stage Pedestrian Detectors.*” IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2018**). Salt Lake City, Utah, USA, Jun 2018.
- [5] **Junhyug Noh\***, Kyung Don Yoo\*, Hajeong Lee, Dong Ki Kim, Chun Soo Lim, Young-Hoon Kim, Jung Pyo Lee, Gunhee Kim, and Yon Su Kim. “*A Machine Learning Approach Using Survival Statistics to Predict Graft Survival in Kidney Transplant Recipients: A Multicenter Cohort Study.*” Scientific Reports, vol. 7, no. 1, pp. 8904, Aug 2017. (**SCI**)
- [4] Kyung Don Yoo, Clara Tammy Kim, Myoung-Hee Kim, **Junhyug Noh**, Gunhee Kim, Ho Kim, Jung Nam An, Jae Yoon Park, Hyunjeong Cho, Kyoung Hoon Kim, Hyunwook Kim, Dong-Ryeol Ryu, Dong Ki Kim, Chun Soo Lim, Yon Su Kim, and Jung Pyo Lee. “*Superior Outcomes of Kidney Transplantation Compared with Dialysis.*” Medicine, vol. 95, no. 33, e4352, Aug 2016. (**SCI**)
- [3] **Junhyug Noh**, Dharani Punithan, Hajeong Lee, Jung Pyo Lee, Yon Su Kim, Dong Ki Kim, and Robert Ian McKay. “*Machine Learning Models and Statistical Measures for Predicting the Progression of IgA Nephropathy.*” International Journal of Software Engineering and Knowledge Engineering, vol. 25, no. 5, pp. 829–849, Jun 2015. (**SCIE**)
- [2] **Junhyug Noh**, Dharani Punithan, Hajeong Lee, Jung Pyo Lee, Yon Su Kim, Dong Ki Kim, and Robert Ian McKay. “*Predicting the Progression of IgA Nephropathy using Machine Learning Methods.*” International Conference on Bio-inspired Information and Communications Technologies (**BICT 2014**). Boston, Massachusetts, USA, Dec 2014. (**Oral**)
- [1] Wonhee Choe, Hyo-Sun Chun, **Junhyug Noh**, Seong-Deok Lee, and Byoung-Tak Zhang. “*Estimating Multiple Evoked Emotions from Videos.*” Annual Meeting of the Cognitive Science Society (**CogSci 2013**). Berlin, Germany, Aug 2013.

**NON PEER-REVIEWED** (Workshops, \*Equal contribution)

- [1] **Junhyug Noh\***, Wonho Bae\*, Jinhwan Seo, and Gunhee Kim. “*Revisiting Class Activation Mapping for Learning from Imperfect Data.*” Learning from Imperfect Data (LID) Workshop (**CVPRW 2020**). Seattle, Washington, USA, Jun 2020.

**AWARDS &  
SCHOLARSHIPS**

- |  |                     |
|--|---------------------|
| <b>Winner for Two Tracks of LID 2020 Challenge</b>   | Jun 2020            |
| <ul style="list-style-type: none"> <li>▪ 1st place for Track 3: Weakly Supervised Object Localization.</li> <li>▪ 2nd place for Track 1: Weakly Supervised Semantic Segmentation.</li> </ul> |                     |
| <b>Excellent Award of Doctoral Degree Thesis</b>   | Feb 2020            |
| <ul style="list-style-type: none"> <li>▪ Selected as the best doctoral thesis by Department of Computer Science and Engineering, Seoul National University.</li> </ul>                       |                     |
| <b>Kakao Travel Grants</b>   | Dec 2019            |
| <ul style="list-style-type: none"> <li>▪ Grant recipient for attending AAAI 2020 (New York, USA) as a part of Kakao Inc’s research-support program</li> </ul>                                |                     |
| <b>Naver Ph.D. Fellowship Award</b>  | Nov 2018            |
| <ul style="list-style-type: none"> <li>▪ Awarded to outstanding graduate students in the computer Science field for one’s exceptional academic research.</li> </ul>                          |                     |
| <b>Excellent Award of Master Degree Thesis</b>   | Feb 2015            |
| <ul style="list-style-type: none"> <li>▪ Selected as the best master’s thesis by Department of Computer Science and Engineering, Seoul National University.</li> </ul>                       |                     |
| <b>National Scholarship for Science and Engineering</b>  | Mar 2005 – Jun 2011 |

- Funded full-tuition scholarship with stipend for undergraduate studies by Korea Student Aid Foundation (KOSAF).

## WORK EXPERIENCE

- EveryBike Inc.**, Seoul, Korea Mar 2020 – Jun 2020
- Data Scientist (Part-time)
    - Established data collection and bike rebalancing strategy for the bike-sharing system.
    - Developed a population visualization tool for selecting service areas.
- Kakao Mobility Corp.**, Seongnam, Korea Jun 2018 – Aug 2018
- Research Intern
    - Developed a number plate detection and recognition model.
- Rolling Heads Inc.**, Seoul, Korea Feb 2013 – Mar 2014
- Technical Advisor (Part-time)
    - Developed a matching algorithm of social dating applications using a genetic algorithm.

## TEACHING EXPERIENCE

- Teaching Assistant and Guest Lecturer**, Seoul National University Mar 2013 – Dec 2016
- M1522.001000 Computer Vision (Instructor: Gunhee Kim)
  - 4190.773 Probabilistic Graphical Models (Instructor: Gunhee Kim)
  - 4190.429 Image Processing (Instructor: Gunhee Kim)
  - 4190.680 Knowledge Representation and Reasoning (Instructor: Robert Ian McKay)
  - 4190.569 Technical Writing for Computer Engineers (Instructor: Robert Ian McKay)
  - 4190.425 Advanced Artificial Intelligence (Instructor: Robert Ian McKay)
  - 4190.101 Discrete Mathematics (Instructor: Robert Ian McKay)
- Instructor**, SNU/SK Big Data Academy Jun 2016 – Sep 2017
- Conducted courses in deep learning with a hands-on tutorial.
  - Topics: TensorFlow, Convolutional Neural Networks, Object Detection, etc.
- Instructor**, HYUNDAI MOBIS Workshop Jun 2016 – Dec 2017
- Conducted courses in autonomous driving with a hands-on tutorial.
  - Topics: Object Detection, Pedestrian Detection, Autonomous Driving.
- Mentor**, Samsung Convergence Software Course (SCSC) Aug 2015 – Jun 2016
- Worked as a mentor to support undergraduate students taking CSE major courses.

## PROFESSIONAL ACTIVITIES

- Reviewer**
- International Journal of Computer Vision (IJCV) 2019/2020
  - IEEE Transactions on Cybernetics 2020
  - IEEE Transactions on Circuits and Systems for Video Technology (TCSVT) 2020
  - IEEE Access 2020
  - Scientific Reports 2020
  - Remote Sensing 2020
  - European Conference on Computer Vision (ECCV) 2020

## OTHER EXPERIENCE

- Military Service** Jul 2006 – Jul 2008
- 602nd Battalion, 2nd Aviation Brigade, Army Aviation Operations Command, Chungbuk, Korea*
- Had honorable discharge as a sergeant and fulfilled military duty.

## SKILLS

**Programming Languages.** Python, R, C/C++, Java, Shell scripts (bash, zsh), Matlab, Ocaml  
**ML/DL Frameworks.** TensorFlow, PyTorch, Caffe  
**Operating Systems.** Linux (Ubuntu), macOS  
**Other Tools and Skills.** Git, Latex, Vim

[Last update: 2020-07-30]