

Juho Lee

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1 Academic History

- July 2020 - Present: Assistant professor.
The graduate school of AI, KAIST.
- Feb 2018 - Feb 2019: Postdoctoral Research Assistant.
Department of Statistics, University of Oxford.
Supervisor: François Caron.
- Mar 2011 - Feb 2018: Master of Science and Doctor of Philosophy (integrated).
Department of Computer Science and Engineering, POSTECH.
Supervisor: Seungjin Choi.
Thesis: *Efficient Bayesian Nonparametric Inference: Tree-Based Methods and Power-Law Models*.
GPA: 4.05/4.30.
- Mar 2007 - Feb 2011: Bachelor of Computer Science and Engineering.
Department of Computer Science and Engineering, POSTECH.
GPA: 3.99/4.30 (*Summa Cum Laude*).

2 Industrial Activities

- Sep 2017 - June 2020: Research Scientist.
AITRICS.
Developing deep learning technologies for interpretable medical artificial intelligence.

3 Research Interests

- Bayesian nonparametric models.
- Bayesian deep learning and deep Bayesian learning.
- Random graph models.
- Deep learning for healthcare

4 Honors

- ICML student travel award (2017).
- NIPS student travel award (2016).
- Global Ph.D fellowship (National Research Foundation of Korea, 2011-2012).
- Chung-Am graduate fellowship (POSTECH, 2011-2013).

5 Publications

5.1 Preprints

- **Juho Lee***, Yoonho Lee*, Jungtaek Kim, Sung Ju Hwang, Eunho Yang, and Yee Whye Teh.
Bootstrapping neural processes.
arXiv:2008.02956.
- Yoonho Lee, **Juho Lee**, Eunho Yang, Sung Ju Hwang, and Seungjin Choi.
Neural complexity measures.
arXiv:2008.02953.
- Fadhel Ayed, **Juho Lee** and François Caron.
The Normal-Generalised Gamma-Pareto process: a novel pure-jump Lévy process with flexible tail and jump-activity properties.
arXiv:2006.10968.
- **Juho Lee**, Yoonho Lee and Yee Whye Teh.
Deep amortized clustering.
arXiv:1909.13433, 2019.
- **Juho Lee**, Xenia Miscouridou, and François Caron.
A unified construction for series representations and finite approximations of completely random measures.
arXiv:1905.10733, 2019.
- **Juho Lee**, Saehoon Kim, Jaehong Yoon, Hae Beom Lee, Eunho Yang, and Sung Ju Hwang.
Adaptive network sparsification via dependent variational beta-Bernoulli dropout.
arXiv:1805.10896v2, 2018.

5.2 Workshop contributions

- **Juho Lee**, Yoonho Lee and Yee Whye Teh.
Towards deep amortized clustering.
NeurIPS 2019 Sets & Partitions workshop (contributed talk).
- Tony Duan and **Juho Lee**.
Graph embedding VAE: a permutation invariant model of graph structure.
NeurIPS 2019 Graph Representation Learning workshop.

5.3 International Conferences

- Jay Heo, Junhyeon Park, Hyewon Jeong, Kwang Joon Kim, **Juho Lee**, Eunho Yang, and Sung Ju Hwang.
Cost-effective interactive attention learning with neural attention processes.
International Conference on Machine Learning (ICML), 2020.
- Ingyo Chung, Saehoon Kim, **Juho Lee**, Sung Ju Hwang, and Eunho Yang.
Deep mixed effect model using Gaussian processes: a personalized and reliable prediction for healthcare.
AAAI Conference on Artificial Intelligence (AAAI), 2020 (to appear).
- Fadhel Ayed*, **Juho Lee***, and François Caron.
Beyond the Chinese restaurant and Pitman-Yor processes: statistical models with double power-law behavior.
International Conference on Machine Learning (ICML), 2019 (*: equal contribution).
- **Juho Lee**, Yoonho Lee, Jungtaek Kim, Adam R. Kosiorek, Seungjin Choi, and Yee Whye Teh. Set transformer: a framework for attention-based permutation-invariant neural networks. *International Conference on Machine Learning (ICML)*, 2019.
- Yanbin Liu, **Juho Lee**, Minseop Park, Saehoon Kim, Eunho Yang, Sung Ju Hwang, and Yi Yang.
Learning to propagate labels: transductive propagation network for few-shot learning.
International Conference on Learning Representations (ICLR), 2019.
- **Juho Lee**, Lancelot F. James, Seungjin Choi, and François Caron.
A Bayesian model for sparse graphs with flexible degree distribution and overlapping community structure.
International Conference on Artificial Intelligence and Statistics (AISTATS), 2019 (oral).
- Jay Heo*, Hae Beom Lee*, Saehoon Kim, **Juho Lee**, Kwang Joon Kim, Eunho Yang, and Sung Ju Hwang (*: equal contribution).
Uncertainty-aware attention for reliable interpretation and prediction.
Neural Information Processing Systems (NeurIPS), 2018.
- Hae Beom Lee, **Juho Lee**, Saehoon Kim, Eunho Yang, and Sung Ju Hwang.
Dropmax: adaptive variational softmax.
Neural Information Processing Systems (NeurIPS), 2018
- **Juho Lee**, Creighton Heakulani, Zoubin Ghahramani, Lancelot F. James, and Seungjin Choi.
Bayesian inference on random simple graphs with power law degree distributions.
International Conference on Machine Learning (ICML), 2017.
- **Juho Lee**, Lancelot F. James and Seungjin Choi.
Finite-dimensional BFRY priors and variational Bayesian inference for power law models.
Advances in Neural Information Processing Systems (NIPS), 2016.

- **Juho Lee** and Seungjin Choi.
Tree-guided MCMC inference for normalized random measure mixture models.
Advances in Neural Information Processing Systems (NIPS), 2015.
- **Juho Lee** and Seungjin Choi.
Bayesian hierarchical clustering with exponential family: Small-variance asymptotics and reducibility.
International Conference on Artificial Intelligence and Statistics (AISTATS), 2015.
- **Juho Lee** and Seungjin Choi.
Incremental tree-based inference with dependent normalized random measures.
International Conference on Artificial Intelligence and Statistics (AISTATS), 2014.
- **Juho Lee**, Suha Kwak, Bohyung Han, and Seungjin Choi.
On-line video segmentation by Bayesian split-merge clustering.
European Conference on Computer Vision (ECCV), 2012.

6 Project Experiences

- Face clustering system with human tagging (Apr 2012 - Dec 2012).
With Samsung Digital Media & Communications Research & Development center.
Developed a face clustering algorithm that can recommend face labels or detect novel faces based on the information given from human tagging.
- Incremental learning for face verification (Apr 2013 - Dec 2013).
With Samsung Digital Media & Communications Research & Development center.
Developed an incremental learning algorithm that can improve face verification accuracy when a small number of personal images come in to the system.
- Basic software research in human-level lifelong machine learning (Apr 2014 - Feb 2018).
With Ministry of Science and ICT (MSIT)/IITP.
Developed Bayesian learning part of the software project SMILE (Software for Machine Intelligence with Lifelong machine LEarning).
- Action recognition with smart devices (Aug 2015 - Jul 2016).
With Samsung Electronics.
Developed an action recognition system based on a lightweight convolutional neural network that works on low-power mobile devices like smart watch.
- Incremental learning for deep learning based image classification systems with novel class detection (Mar 2016 - Dec 2016).
With LG Electronics.
Developed an incremental learning algorithm for deep learning architectures that detect the novel (unseen) classes using few examples per labels.

7 Teaching Experiences

- Lecturer for Samsung DS AI expert course (July 2020)
- Lecturer for deep learning/Tensorflow class in POSCO (Jun 2017)
- Lecturer for basic machine learning class in Samsung Research Study Center in GiHeung (Jul 2017)
- Lecturer for deep learning/Tensorflow class in Samsung Research Study Center in GiHeung (Jul 2017)

8 Skills

- Programming languages: MATLAB, C++, Python, Julia
- Deep learning libraries: Tensorflow, Torch, PyTorch, Theano
- Mathematical backgrounds: probability and statistics, stochastic process theory, linear algebra