

Juho Lee

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1 Academic History

- 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 - Present: 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 and Yee Whye Teh. Deep amortized clustering. *arXiv:1909.13433*, 2019.
- **Juho Lee**, Xenia Miscouridou, and Franois 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 International Conferences

- 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 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