Taehoon Kim

https://carpedm20.github.io/

INTERESTS Program Induction, Reasoning, Reinforcement Learning (RL)

EDUCATION

Ulsan National Institute of Science and Technology (UNIST) Mar 2011 – Aug 2015

- B.S. in Computer Science and Engineering
- *Cumulative GPA: 3.73 / 4.30 (Magna Cum Laude)*
- Graduated with Outstanding Graduate Award (ranked 1st out of 509 undergraduates)

PUBLICATIONS

[5] T. Kim†, Y. Lee† and J. Lim, Teaching Machines to Understand Visual Manuals via Attention Supervision for Object Assembly, Under review, 2017

[4] T. Kim, J. Choi, D. Lee, A. Sim, C. A. Spurlock, A. Todd, K. Wu, Predicting Baseline for Analysis of Electricity Pricing, In *International Journal of Big Data Intelligence* (**IJBDI**), 2016

[3] J. Lee, K. Lee, C. Han, T. Kim, and S. Chong, Resource-efficient Mobile Multimedia Streaming with Adaptive Network Selection, In *IEEE Transactions on Multimedia*, 2016

[2] T. Kim and J. Choi, Reading documents for bayesian Online Change Point Detection, In *Empirical Methods on Natural Language Processing* (**EMNLP**), 2015

[1] T. Kim, D. Lee, J. Choi, A. Spurlock, A. Sim, A. Todd, K. Wu, Extracting Baseline Electricity Usage Using Gradient Tree Boosting, In *International Conference on Big Data Intelligence and Computing* (**DataCom**), 2015, **Best Paper Award**

RESEARCH EXPERIENCE

University of Southern California, Los Angeles, USA Jan 2017 – Present
Visiting Researcher (Advisor: Prof. Joseph J. Lim)

- Propose attention-based agents guided by step-by-step visual instructions to solve hierarchical tasks [5].

Lawrence Berkeley National Laboratory, California, USA Jul 2015 – Aug 2015
Research Intern (Advisors: John Wu, Alex Sim)

- Propose baseline usage models for each household to cluster the households into different groups [4].
- Identify energy usage patterns and cluster actions of households through gradient boosted trees [1].

Probabilistic Artificial Intelligence Lab, UNIST Sep 2014 – Sep 2015
Research Intern (Advisor: Prof. Jaesik Choi)

- Propose Bayesian model conditioned on text to predict change points in time series data [2].

Mobile Smart Networking Laboratory, UNIST Jan 2013 – Aug 2014
Research Intern (Advisor: Prof. Kyunghan Lee)

- Develop algorithm for optimized mobile video streaming with context-aware scheduling and caching [3].

INDUSTRY EXPERIENCE

Devsisters, Seoul, South Korea Apr 2016 – Present
Research Engineer

- Develop automatic game balancing framework with Double Q-learning, Dueling network, Prioritized replay memory and used prediction on beneficial and dangerous events as intrinsic rewards.
- Implement generative models including BEGAN and multi-speaker speech synthesis models like Tacotron.
- Work as a substitute of mandatory military service.

Moloco, California, USA Oct 2014 – Jan 2015
Software Engineering Intern

- Implement maximum-likelihood estimation model of the number of users who will download an application.
- Develop web visualization of models from large-scale database with query optimization and cache system.

Naver Labs, Seoul, South Korea Jul 2014 – Aug 2014
Software Engineering Intern

- Develop front-end and back-end of cloud comment hosting service.

AWARDS

Best Paper Award [2], DataCom 2015
Graduated with Outstanding Graduate Award, UNIST, 2015
Outstanding Student Award, UNIST, 2013, 2014
Finalist, International Student Cluster Challenge, 2014
Finalist, Asia student Supercomputing Challenge, 2014
Finalist, Korea Whitehat Hacking Competition, 2014
3rd place ($ 8,000 as awards), Korea Whitehat Hacking Competition, 2013
1st place ($ 1,000 as awards), The Catholic University of Korea Hacking Competition, 2013
Finalist, Asia student Supercomputing Challenge, 2013

SCHOLARSHIPS

Global Scholarship for Undergraduate Research Opportunities Program, UNIST 2015
Received $3,000 as financial support for research internship at Lawrence Berkeley National Laboratory

Academic Performance Scholarship, UNIST 2011 – 2015
National Science and Engineering Scholarship, Korean Student Aid Foundation 2013

TALKS

DEVIEW 2016 & 2017, Seoul, South Korea 2016, 2017
Multi-Speaker Speech Synthesis with Attention-Based Deep Learning.

Naver Clova, Seoul, South Korea 2017
Recent Advancement of Deep Reinforcement Learning from Multi-Agent to Meta Learning.

PyCon APAC 2016, Seoul, South Korea 2016
Automatic Game Balancing Framework with Deep Reinforcement Learning.

TensorFlow Korea, Seoul, South Korea 2016
Advanced Deep Learning: End-to-End Memory Network and Asynchronous Advantageous Actor-Critic method

PROJECTS

GENERATIVE

DCGAN in TensorFlow (★ 3k+*) Jan 2016
Implemented Deep Convolutional Generative Adversarial Networks (Radford et, al. 2015)
The code is referenced in more than 25 papers including:
- Improved Techniques for Training GANs (Salimans et, al. 2016) from OpenAI
- Least Squares Generative Adversarial Networks (Mao et, al. 2016)
- Semi-supervised learning with generative adversarial networks (Odena et, al 2016)

BEGAN in TensorFlow (★ 500+) Apr 2017
Implemented BEGAN: Boundary Equilibrium Generative Adversarial Networks (Berthelot et, al. 2017)
The code is used in following papers:
- GANs Trained by a Two Time-Scale Update Rule Converge to a Nash Equilibrium (Heusel et, al 2017)
- MAGAN: Margin Adaptation for Generative Adversarial Networks (Wang et, al. 2017)

Multi-Speaker Speech Synthesis in TensorFlow Oct 2017
Implemented Deep Voice 2: Multi-Speaker Neural Text-to-Speech (Berthelot et, al. 2017) in TensorFlow

BEGAN in PyTorch (★ 200+) Apr 2017
Implemented BEGAN: Boundary Equilibrium Generative Adversarial Networks (Berthelot et, al. 2017) in PyTorch

DiscoGAN in PyTorch (★ 500+) Mar 2017
Implemented Learning to Discover Cross-Domain Relations with Generative Adversarial Networks (Kim et, al. 2017)

Simulated+Unsupervised learning in TensorFlow (★ 300+) Jan 2017
Implemented Learning from Simulated and Unsupervised Images through Adversarial Training (Shrivastava et, al. 2016)

Pixel Recurrent Neural Networks (★ 300+) Jul 2016
Implemented Pixel Recurrent Neural Networks (Oord et, al. 2016)

Deep Visual Analogy-Making in TensorFlow (★ 200+) Feb 2016
Implemented Deep Visual Analogy-Making (Reed et, al. 2015)

Neural Face Jan 2016
A web application that generates Asian face images with DCGAN-tensorflow and convnet.js

*The number of stars a repository has on github.com/carpedm20

RL

Normalized Advantage Functions in TensorFlow (★ 100+) Jul 2016
Implemented Continuous Deep Q-Learning with Model-based Acceleration Learning (Gu et, al. 2016)

Dueling Network in TensorFlow (★ 900+) Jul 2016
Implemented Dueling Network Architectures for Deep Reinforcement Learning (Wang et, al. 2015)

Deep Q-network in TensorFlow (★ 1k+) Jun 2016
Implemented Deep Q-Network (Vinyals et, al. 2015) in TensorFlow

Asynchronous Advantageous Actor-Critic in TensorFlow Jun 2016
Implemented Asynchronous Methods for Deep Reinforcement Learning (Mnih et, al. 2016)

NLP

Neural Variational Inference for Text Processing in TensorFlow (★ 400+) May 2016
Implemented Neural Variational Inference for Text Processing (Miao et, al. 2015)
The code is used in following papers:
- Autoencoding Variational Inference For Topic Models (Srivastava et, al. 2017)
- Neural Variational Inference For Topic Models (Srivastava et, al. 2016)

Character-Aware Neural Language Models in TensorFlow (★ 500+) Feb 2016
Implemented Character-Aware Neural Language Models (Kim et, al. 2016)

End-To-End Memory Networks in TensorFlow (★ 500+) Dec 2015
Implemented End-To-End Memory Networks (Sukhbaatar et, al. 2015)

ETC

Pointer Network in TensorFlow (★ 100+) Jan 2017
Implemented Learning to Discover Cross-Domain Relations with Generative Adversarial Networks (Kim et, al. 2015)

Neural Turing Machine in TensorFlow (★ 700+) Dec 2015
Implemented Neural Turing Machine (Graves et, al. 2014) in TensorFlow

Reverse Engineering, *LINE, KakaoTalk, Between, Ndrive, and Korail* (★ 600+) Aug 2014
Reverse engineered 5 commercial services including 2 mobile messengers, LINE and KakaoTalk and wrote python libraries

REFERENCES

Joseph J. Lim
Assistant Professor
Department of Computer Science
University of Southern California
Email: lim@csail.mit.edu

John Wu
Group Leader
Scientific Data Management Group
Lawrence Berkeley National Laboratory
Email: kwu@lbl.gov

Jaesik Choi
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Alex Sim
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