

# Taehoon Kim

<https://carpedm20.github.io/>

EDUCATION	<b>Ulsan National Institute of Science and Technology (UNIST)</b> • B.S. in Computer Science and Engineering • Graduated with Outstanding Graduate Award (ranked 1 <sup>st</sup> out of 509 undergraduates)	Mar 2011 – Aug 2015
HONORS & AWARDS	<b>Best Paper Award</b> , International Conference on Big Data Intelligence and Computing (DataCom) 2015 AI Grant Fellowship (\$2,500 cash + \$20,000 credit as award), 2018 Outstanding Graduate Award, UNIST, 2015 Dean's List, UNIST, 2013, 2014 Finalist, International Student Cluster Challenge, International Conference on Supercomputing (ICS), 2014 Finalist, Asia student Supercomputing Challenge (ASC), 2014 Finalist, Korea Whitehat Hacking Competition, 2014 3 <sup>rd</sup> place (\$ 8,000 as awards), Korea Whitehat Hacking Competition, 2013 1 <sup>st</sup> place (\$ 1,000 as awards), The Catholic University of Korea Hacking Competition, 2013 Finalist, Asia student Supercomputing Challenge (ASC), 2013	
SCHOLARSHIP	Academic Performance Scholarship, UNIST, 2011 – 2015 Global Scholarship for Undergraduate Research Opportunities Program (UROP), UNIST, 2015 National Science and Technology Scholarship, Korean Student Aid Foundation, 2013	
PUBLICATIONS	[6] Y. Lee, <u>T. Kim</u> , J. Lim, Teaching Machines to Understand Visual Manuals via Attention Supervision for Object Assembly, Submitted, 2018 [5] H. Noh, <u>T. Kim</u> , J. Mun, B. Han, Transfer Learning via Unsupervised Task Discovery for Visual Question Answering, 2018 [4] <u>T. Kim</u> , J. Choi, D. Lee, A. Sim, C. A. Spurlock, A. Todd, K. Wu, Predicting Baseline for Analysis of Electricity Pricing, In <i>International Journal of Big Data Intelligence (IJBDI)</i> , 2016 [3] J. Lee, K. Lee, C. Han, <u>T. Kim</u> , S. Chong, Resource-efficient Mobile Multimedia Streaming with Adaptive Network Selection, In <i>IEEE Transactions on Multimedia</i> , 2016 [2] <u>T. Kim</u> , J. Choi, Reading documents for bayesian Online Change Point Detection, In <i>Empirical Methods in Natural Language Processing (EMNLP)</i> , 2015 [1] <u>T. Kim</u> , D. Lee, J. Choi, A. Spurlock, A. Sim, A. Todd, K. Wu, Extracting Baseline Electricity Usage Using Gradient Tree Boosting, In <i>International Conference on Big Data Intelligence and Computing (DataCom)</i> , 2015, <b>Best Paper Award</b>	
RESEARCH EXPERIENCE	<b>OpenAI</b> , San Francisco, USA <i>Research Engineer (Advisor: John Schulman)</i>  <b>Cognitive Learning for Vision and Robotics Lab</b> , USC, Los Angeles, USA <i>Visiting Researcher (Advisor: Prof. Joseph J. Lim)</i> • Developed attention-based agents which are guided by step-by-step visual instructions to solve hierarchical tasks such as assembling IKEA furniture. Trained agents with self-supervision and semi-supervised learning to achieve generalization of unseen shapes and colors [5].  <b>Lawrence Berkeley National Laboratory</b> , Berkeley, USA <i>Research Intern (Advisors: John Wu, Alex Sim)</i> • Developed baseline models of electricity usage data to find reference usage patterns for different household groups. Used gradient boosting algorithm to capture differences of daily peak usages between groups and analyzed baseline of each group by controlling highly correlated features [1, 4].  <b>Statistical Artificial Intelligence Lab</b> , UNIST, South Korea <i>Research Intern (Advisor: Prof. Jaesik Choi)</i> • Improved Bayesian changepoint detection models by incorporating external information implicitly written in texts. Incorporated documents as a conditional variable of changepoint prior so that model learns a generative model of texts which represents a relation between textual features and change of data [2].	Sep 2018 – Present  Jan 2017 – Sep 2018  Jul 2015 – Aug 2015  Sep 2014 – Sep 2015

	<b>Mobile Smart Networking Laboratory, UNIST</b> <i>Research Intern (Advisor: Prof. Kyunghan Lee)</i> <ul style="list-style-type: none"> <li>Implemented algorithm for mobile video streaming with context-aware scheduling and caching [3].</li> </ul>	Jan 2013 – Aug 2014
INDUSTRY EXPERIENCE	<b>Devsisters, Seoul, South Korea</b> Research Engineer <ul style="list-style-type: none"> <li>Developed framework for automatic game balancing with deep reinforcement learning including Double Q-learning, Dueling Network, and Prioritized Replay Memory.</li> <li>Implemented generative adversarial networks and multi-speaker speech synthesis models.</li> <li>Worked as a substitute for mandatory military service.</li> </ul>	Apr 2016 – Aug 2018
	<b>Vingle, Seoul, South Korea</b> Software Engineer <ul style="list-style-type: none"> <li>Developed system for personal push notification and statistical data visualization of user retention.</li> <li>Worked as a substitute for mandatory military service.</li> </ul>	Oct 2015 – Apr 2016
	<b>Moloco, California, USA</b> <i>Software Engineering Intern</i> <ul style="list-style-type: none"> <li>Implemented prediction models that target advertisements of mobile application based on purchase history.</li> <li>Developed online data visualization with a large-scale database using cache and query optimization.</li> </ul>	Oct 2014 – Jan 2015
	<b>NAVER Labs, Seoul, South Korea</b> <i>Software Engineering Intern</i> <ul style="list-style-type: none"> <li>Developed front-end and back-end of web application for cloud comments.</li> </ul>	Jul 2014 – Aug 2014
TALKS	<b>DEVVIEW 2016 &amp; 2017, Seoul, South Korea</b> <ul style="list-style-type: none"> <li>Multi-Speaker Speech Synthesis with Attention-Based Deep Learning.</li> <li>How to build a Framework for Automatic Game Balancing with Deep Reinforcement Learning.</li> </ul>	2016, 2017
	<b>NAVER Clova AI 2017 &amp; 2018, Seoul, South Korea</b> <ul style="list-style-type: none"> <li>Recent Advancement of Deep Reinforcement Learning from Multi-Agent to Meta-Learning.</li> </ul>	2017
	<b>PyCon APAC 2016, Seoul, South Korea</b> <ul style="list-style-type: none"> <li>Deep Convolutional GAN, Neural Turing Machine, Deep Q-learning and Visual Analogy.</li> </ul>	2016
	<b>TensorFlow Korea, Seoul, South Korea</b> <ul style="list-style-type: none"> <li>End-to-End Memory Network and Asynchronous Advantage Actor-Critic method.</li> </ul>	2016
LEADERSHIP	<b>President of Computer Security Club, UNIST</b> <ul style="list-style-type: none"> <li>Led teams for domestic and international hacking competitions (\$ 9,000 as total awards).</li> <li>Participated in 3 international supercomputing challenges (3 Finalist awards).</li> <li>Reported vulnerabilities on 3 commercial mobile and web services.</li> </ul>	2012 – 2013
PROJECTS		
GENERATIVE	<b>Deep Convolutional GAN (★ 4.8k+*)</b> Implemented Deep Convolutional Generative Adversarial Networks (Radford et, al. 2015) and web demo with <i>convnet.js</i> The code is referenced in more than 25 papers including: <ul style="list-style-type: none"> <li>Improved Techniques for Training GANs (Salimans et, al. 2016) from OpenAI</li> <li>Least Squares Generative Adversarial Networks (Mao et, al. 2016)</li> <li>Semi-supervised learning with generative adversarial networks (Odena et, al 2016)</li> </ul>	Jan 2016
	<b>Boundary Equilibrium GAN (★ 600+)</b> Implemented BEGAN: Boundary Equilibrium Generative Adversarial Networks (Berthelot et, al. 2017) The code is used in the following papers: <ul style="list-style-type: none"> <li>GANs Trained by a Two Time-Scale Update Rule Converge to a Nash Equilibrium (Heusel et, al 2017)</li> <li>MAGAN: Margin Adaptation for Generative Adversarial Networks (Wang et, al. 2017)</li> </ul>	Apr 2017
	<b>Multi-Speaker Speech Synthesis (★ 200+)</b> Implemented Deep Voice 2: Multi-Speaker Neural Text-to-Speech (Berthelot et, al. 2017)	Oct 2017

\*The number of stars a repository has on [github.com/carpedm20](https://github.com/carpedm20)

**Discovering Cross-Domain GAN (★ 700+)** Mar 2017  
Implemented Learning to Discover Cross-Domain Relations with Generative Adversarial Networks (Kim et, al. 2017)

**Simulated+Unsupervised Learning GAN (★ 400+)** 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 (★ 200+)** Feb 2016  
Implemented Deep Visual Analogy-Making (Reed et, al. 2015)

**PROGRAM INDUCTION** **Reinforcement Learning Program Synthesis** Dec 2017  
Implemented Leveraging Grammar and Reinforcement Learning for Neural Program Synthesis (Under review, 2017)

**Pointer Network (★ 200+)** Jan 2017  
Implemented Pointer Networks (Vinyals et, al. 2015)

**Neural Turing Machine (★ 800+)** Dec 2015  
Implemented Neural Turing Machine (Graves et, al. 2014)

**RL** **Synthesizing Programs for Images using Reinforced Adversarial Learning** Apr 2018  
Implemented Synthesizing Programs for Images using Reinforced Adversarial Learning (Ganin et, al. 2018)

**Efficient Neural Architecture Search via Parameters Sharing (★ 800+)** Feb 2018  
Implemented Efficient Neural Architecture Search via Parameters Sharing (Pham et, al. 2018)

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

**Dueling Double Q-Learning (★ 1.3k+)** Jul 2016  
Implemented Dueling Network Architectures for Deep Reinforcement Learning (Wang et, al. 2015)

**Deep Q-Network (★ 1.7k+)** Jun 2016  
Implemented Human-Level Control through Deep Reinforcement Learning (Vinyals et, al. 2015)

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

**NLP** **Neural Variational Inference for Text Processing (★ 400+)** May 2016  
Implemented Neural Variational Inference for Text Processing (Miao et, al. 2015)  
The code is used in the 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 (★ 500+)** Feb 2016  
Implemented Character-Aware Neural Language Models (Kim et, al. 2016)

**End-To-End Memory Networks (★ 600+)** Dec 2015  
Implemented End-To-End Memory Networks (Sukhbaatar et, al. 2015)

## REFERENCES

**Joseph J. Lim**

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Email: lim@csail.mit.edu

**John Wu**

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Scientific Data Management Group

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**Jaesik Choi**

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**Alex Sim**

*Senior Computing Engineer*

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