

# KYUNGWOO SONG

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## EDUCATION

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**KAIST, Daejeon, Korea** *Mar. 2017 - Feb. 2021 (expected)*  
Ph.D. student in AAILab, ISysE (Industrial & Systems Engineering)  
Advisor: Il-Chul Moon  
Thesis: Context-Aware Model with Generalized Structured Gate and Attention

**KAIST, Daejeon, Korea** *Mar. 2015 – Feb. 2017*  
M.S. in AAILab, ISysE  
Advisor: Il-Chul Moon  
Thesis: Deep Ideal Point Estimation With Network

**KAIST, Daejeon, Korea** *Feb. 2010 – Feb. 2015*  
B.S. in Mathematical Sciences  
B.S. in ISysE

## PUBLICATIONS

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### Peer-Reviewed Papers

- [1] **Kyungwoo Song**, Yohan Jung, Dongjun Kim, and Il-Chul Moon, “Implicit Kernel Attention”, AAAI Conference on Artificial Intelligence (AAAI) 2021.
- [2] Hyemi Kim, Seungjae Shin, JoonHo Jang, **Kyungwoo Song**, Weonyoung Joo, Wanmo Kang, and Il-Chul Moon, “Counterfactual Fairness with Disentangled Causal Effect Variational Autoencoder”, AAAI Conference on Artificial Intelligence (AAAI) 2021.
- [3] Seungjae Shin, **Kyungwoo Song**, Joonho Jang, Hyemi Kim, Weonyoung Joo, and Il-Chul Moon, “Neutralizing Gender Bias in Word Embedding with Latent Disentanglement and Counterfactual Generation”, Findings of Empirical Methods in Natural Language Processing (Findings of EMNLP) 2020.
- [4] ByeongHu Na, Hyemi Kim, **Kyungwoo Song**, Weonyoung Joo, Yoonyoung Kim, and Il-Chul Moon, “Deep Generative Positive-Unlabeled Learning under Selection Bias”, Conference on Information and Knowledge Management (CIKM) 2020.
- [5] **Kyungwoo Song**, “Context Aware Sequence Modeling”, International Joint Conference on Artificial Intelligence (IJCAI) 2020, Doctoral Consortium.
- [6] **Kyungwoo Song**, JoonHo Jang, Seung jae Shin, and Il-Chul Moon, “Bivariate Beta-LSTM”, AAAI Conference on Artificial Intelligence (AAAI) 2020.
- [7] Su-Jin Shin, **Kyungwoo Song**, and Il-Chul Moon, “Hierarchically Clustered Representation Learning”, AAAI Conference on Artificial Intelligence (AAAI) 2020.
- [8] Mingi Ji, Weonyoung Joo, **Kyungwoo Song**, Yoonyoung Kim, and Il-Chul Moon, “Sequential Recommendation with Relation-Aware Kernelized Self-Attention”, AAAI Conference on Artificial Intelligence (AAAI) 2020.

- [9] **Kyungwoo Song\***, Mingi Ji\*, Sungrae Park, and Il-Chul Moon, “Hierarchical Context enabled Recurrent Neural Network for Recommendation”, AAAI Conference on Artificial Intelligence (AAAI) 2019.
- [10] Sungrae Park, **Kyungwoo Song**, Mingi Ji, Wonsung Lee, and Il-Chul Moon, “Adversarial Dropout for Recurrent Neural Networks”, AAAI Conference on Artificial Intelligence (AAAI) 2019.
- [11] Il-Chul Moon, Jinhyung Tak, Sang-Hyeon Kim, and **Kyungwoo Song**, “Ballistic Coefficient Estimation with Gaussian Process Particle Filter” International Conference on Control, Automation and Systems (ICCAS) 2018.
- [12] **Kyungwoo Song**, Wonsung Lee, and Il-Chul Moon, “Neural Ideal Point Estimation Network”, AAAI Conference on Artificial Intelligence (AAAI) 2018.
- [13] Il-Chul Moon, **Kyungwoo Song**, Sang-Hyeon Kim, and Han-Lim Choi, “State Prediction of High-speed Ballistic Vehicles with Gaussian Process”, International Journal of Control, Automation and Systems (IJCAS), 2018.
- [14] Wonsung Lee, **Kyungwoo Song**, and Il-Chul Moon, “Augmented Variational Autoencoders for Collaborative Filtering with Auxiliary Information”, Conference on Information and Knowledge Management (CIKM) 2017.
- [15] **Kyungwoo Song**, Sang-Hyeon Kim, Jinhyung Tak, Han-Lim Choi, and Il-Chul Moon, “Data-driven ballistic coefficient learning for future state prediction of high-speed vehicles”, International Conference on Information Fusion (FUSION) 2016.
- [16] **Kyungwoo Song**, Do-Hyeong Kim, Su-Jin Shin, and Il-Chul Moon, “Identifying the evolution of disasters and responses with network-text analysis”, IEEE International Conference on Systems, Man, and Cybernetics (SMC) 2014.

#### Under Review

- [1] Dongjun Kim, **Kyungwoo Song**, Yoonyoung Kim, Yongjin Shin, and Il-Chul Moon, “Sequential Likelihood-Free Inference with Implicit Surrogate Proposal”.
- [2] Yohan Jung, **Kyungwoo Song**, and Jinkyoo Park, “Approximate Inference for Spectral Mixture Kernel”.
- [3] Dongjun Kim, Weonyoung Joo, Seungjae Shin, **Kyungwoo Song**, and Il-Chul Moon, “Adversarial Likelihood-Free Inference on Black-Box Generator”.
- [4] Yoon-Yeong Kim, **Kyungwoo Song**, JoonHo Jang, and Il-chul Moon, “Look-Ahead Acquisition with Informative Mixup for Active Learning”.

(\* Equal Contribution)

#### TEACHING

##### KAIST, Korea

- Teaching Assistant, Introduction to Data Structure and Algorithm I, KOOC (Apr. 2019 - Jul. 2019)
- Teaching Assistant, Introduction to Data Structure and Algorithm II, KOOC (Apr. 2019 - Jul. 2019)
- Teaching Assistant, Advanced Artificial Intelligence and Machine Learning, KOOC (Aug. 2018)
- Teaching Assistant, Introduction to Artificial Intelligence and Machine Learning II, KOOC (Mar. 2018 - Jul. 2018)

- Teaching Assistant, Introduction to Data Structure and Algorithm II, KOOC (Nov. 2017 - Dec. 2017)
- Teaching Assistant, Applied Data Structures, and Algorithms, ISysE (Sep. 2017 - Dec. 2017)
- Research Mentor, Undergraduate Research Program (URP), Movie Recommendation with Matrix Factorization based on Trust and Auxiliary information (Jun. 2016 - Dec. 2016)
- Teaching Assistant, Introduction to Artificial Intelligence and Machine Learning I, KOOC (Apr. 2016 - Jun. 2016)
- Teaching Assistant, Applications of AI/DM Technology, ISysE (Mar. 2016 - Jun. 2016)
- Teaching Assistant, Applied Data Structures, and Algorithms, ISysE (Sep. 2015 - Dec. 2015)

#### **Hanbat National University, Korea**

- Part-Time Lecturer, Operations Management, Business Administration (Mar. 2017 - Aug. 2017)

#### **Daejeon Youth Edu-Culture Center, Korea**

- Volunteer Lecturer for Mathematics (Feb. 2013 - Dec. 2014)

### **WORKING EXPERIENCE**

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#### **NAVER Clova, Korea**

Visiting Researcher, Diverse Dialogue Generation

*Oct. 2018 - Dec. 2018*

### **AWARDS & SCHOLARSHIPS**

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KAKAO Research Supporting Program, 2018

AAAI Student Scholar, 2018

SMC Student Travel Grant, 2014

2nd prize, The competition of Ministry of Knowledge Economy, Korea, 2010

Excellence Prize, The competition of Ministry of Environment, Korea, 2010

### **INVITED TALKS**

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POSTECH, Korea (Oct. 2020)

Australian National University, Australia (Aug. 2020)

KAKAO, Korea (May 2018)

NAVER, Korea (Apr. 2018)

### **SERVICES**

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Program Committee Member: IJCAI 2020, ACL 2020, CMOT 2020, EMNLP 2020, NeurIPS 2020, AAAI 2021, ICLR 2021, AISTATS 2021, ICML 2021

### **PROJECT**

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#### **Virtual Metrology for Plasma Enhanced Chemical Vapor Deposition**

*funded by semiconductor company in South Korea*

*Oct. 2020 - Present*

#### **Vision-based semiconductor quality inspection**

*funded by semiconductor company in South Korea*

*Apr. 2020 - Sep. 2020*

#### **Classification for customer's financial transaction history**

*funded by commercial bank in South Korea*

*Nov. 2019 - Mar. 2020*

<b>Vision-based tire quality inspection</b> <i>funded by tire company in South Korea</i>	<i>Mar. 2019 - Oct. 2019</i>
<b>Multi-language, multi-source, polymorphic data analysis</b> <i>funded by National Research Foundation (NRF)</i>	<i>Jul. 2016 - Dec. 2017</i>
<b>Estimation and prediction of high-speed vehicle trajectory</b> <i>funded by Government Agency</i>	<i>Mar. 2015 - Jun. 2016</i>
<b>Development of temporal and spatial text mining technique and application to crime pattern analysis and prediction</b> <i>funded by KAIST Undergraduate Research Program (URP)</i>	<i>Jun. 2014 - Dec. 2014</i>
<b>Identifying “strategic research areas” for basic research</b> <i>funded by National Research Foundation (NRF)</i>	<i>Jan. 2013 - Aug. 2013</i>
<b>Measuring the social impacts of publicly funded R&amp;D</b> <i>funded by Korea Institute of Science &amp; Technology Evaluation and Planning</i>	<i>Feb. 2013 - Jun. 2013</i>
<b>Strategy for maximizing online customer’s satisfaction</b> <i>funded by KT</i>	<i>Jan. 2012 - Feb. 2012</i>
<b>Strategy for enlarging the number of 30~40’s women customer</b> <i>funded by Ticket Monster</i>	<i>Nov. 2010 - Dec. 2010</i>