

KYUNGWOO SONG

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EDUCATION

KAIST, Daejeon, Korea *Mar. 2017 - Feb. 2021 (expected)*
Ph.D. student in AAILab, ISysE (Industrial & Systems Engineering)
Advisor: Il-Chul Moon
Area : Sequence Model, Context Aware Model, Generative Model

KAIST, Daejeon, Korea *Mar. 2015 – Feb. 2017*
M.S. in AAILab, ISysE
Advisor: Il-Chul Moon

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

PUBLICATIONS

Peer-Reviewed Papers

- [1] 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 EMNLP 2020
- [2] ByeongHu Na, Hyemi Kim, **Kyungwoo Song**, Weonyoung Joo, Yoonyeong Kim, Il-Chul Moon. Deep Generative Positive-Unlabeled Learning under Selection Bias, CIKM 2020
- [3] **Kyungwoo Song**. Context Aware Sequence Modeling, IJCAI-PRICAI 2020 Doctoral Consortium.
- [4] **Kyungwoo Song**, JoonHo Jang, Seung jae Shin, Il-Chul Moon. Bivariate Beta-LSTM. AAAI Conference on Artificial Intelligence (AAAI 2020). New York. Feb. 7-Feb. 12
- [5] Su-Jin Shin, **Kyungwoo Song**, Il-Chul Moon. Hierarchically Clustered Representation Learning. AAAI Conference on Artificial Intelligence (AAAI 2020). New York. Feb. 7-Feb. 12
- [6] Mingi Ji, Weonyoung Joo, **Kyungwoo Song**, Yoonyeong Kim, Il-Chul Moon. Sequential Recommendation with Context-aware Kernelized Self-Attention. AAAI Conference on Artificial Intelligence (AAAI 2020). New York. Feb. 7-Feb. 12
- [7] **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). Hawaii. Jan. 27-Feb. 1 (* Equal Contribution)
- [8] 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). Hawaii. Jan. 27-Feb. 1
- [9] Il-Chul Moon, Jinhyung Tak, Sang-Hyeon Kim, and **Kyungwoo Song**. Ballistic Coefficient Estimation with Gaussian Process Particle Filter, 18th International Conference on Control, Automation and Systems (ICCAS 2018), Oct. 17–20, PyeongChang, GangWon, Korea

- [10] **Kyungwoo Song**, Wonsung Lee, Il-Chul Moon. Neural Ideal Point Estimation Network. In The Thirty-Second AAAI Conference on Artificial Intelligence (AAAI 2018). New Orleans, Feb. 2-Feb. 7
- [11] 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
- [12] Wonsung Lee, **Kyungwoo Song**, Il-Chul Moon. Augmented Variational Autoencoders for Collaborative Filtering with Auxiliary Information. In The ACM International Conference on Information and Knowledge Management (CIKM 2017)
- [13] **Kyungwoo Song**, Sang-Hyeon Kim, Jinhyung Tak, Han-Lim Choi, Il-Chul Moon. Data-driven ballistic coefficient learning for future state prediction of high-speed vehicles. In Information Fusion (FUSION), 2016 19th International Conference on (pp. 17-24). IEEE.
- [14] **Kyungwoo Song**, Do-Hyeong Kim, Su-Jin Shin, Il-Chul Moon. Identifying the evolution of disasters and responses with network-text analysis. In Systems, Man and Cybernetics (SMC), 2014 IEEE International Conference (pp. 664-671).

Preprints

- [1] **Kyungwoo Song**, Yohan Jung, Dongjun Kim, Il-Chul Moon. Implicit Kernel Attention.
- [2] Hyemi Kim, Seungjae Shin, JoonHo Jang, **Kyungwoo Song**, Weonyoung Joo, Wanmo Kang, Il-Chul Moon. Counterfactual Fairness with Disentangled Causal Effect Variational Autoencoder.
- [3] Yohan Jung, **Kyungwoo Song**, Jinkyoo Park. Approximate Inference for Spectral Mixture Kernel.
- [4] Dongjun Kim, Weonyoung Joo, Seungjae Shin, **Kyungwoo Song**, Il-Chul Moon. Adversarial Likelihood-Free Inference on Black-Box Generator.
- [5] Yoon-Yeong Kim, **Kyungwoo Song**, JoonHo Jang, Il-chul Moon. Look-Ahead Acquisition with Informative Mixup for Active Learning.

TEACHING

KAIST, Korea *May 2019 - Jul. 2019*
Teaching Assistant, Data Structure and Algorithm Introduction I & II, KOOC (online)

KAIST, Korea *Apr. 2018 - Jun. 2018*
Teaching Assistant, Introduction to Artificial Intelligence and Machine Learning, KOOC (online)

KAIST, Korea *Sep. 2017 - Dec. 2017*
Teaching Assistant, Applied Data Structures, and Algorithms, ISysE

Hanbat National University, Korea *Mar. 2017 - Jun. 2017*
Part-Time Lecturer, Operations Management, Business Administration

KAIST, Korea *Mar. 2016 - Jun. 2016*
Teaching Assistant, Applications of AI/DM Technology, ISysE

KAIST, Korea *Sep. 2015 - Dec. 2015*
Teaching Assistant, Applied Data Structures, and Algorithms, ISysE

WORKING EXPERIENCE

AWARDS & SCHOLARSHIPS

KAKAO Research Supporting Program, 2018
AAAI Student Scholar, 2018
SMC Student Travel Grant, 2014

INVITED TALKS

Australian National University, Australia	Aug. 2020
KAKAO, Korea	May 2018
NAVER, Korea	Apr. 2018

SERVICES

Program Committee Member: IJCAI 2020, ACL 2020, CMOT 2020, EMNLP 2020, NeurIPS 2020

PROJECT

Vision-based Quality Inspection Apr. 2020 - Sep. 2020
funded by semiconductor company in South Korea
Developed a classifier for new type and already known-type of anomaly detection (open-set classification). We develop a two-step approach to 1) classify the anomaly and 2) find a new type of anomaly that should be labeled newly.

Automatic Classification for Customer Transaction History Nov. 2019 - Mar. 2020
funded by commercial bank in South Korea
We developed a classifier for customer's financial transactions such as payment, deposit, and credit card history. To handle the text data, we design a neural network with fastText and BERT.

Vision-based Quality Inspection Mar. 2019 - Oct. 2019
funded by tire company in South Korea
We developed an anomaly classifier and anomaly region detector for various types of tire dataset. For efficient region detection, we developed a patch-based sampling and classification.

Multi-language, multi-source, Polymorphic data analysis Jul. 2016 - Dec. 2017
funded by National Research Foundation (NRF)
Developed a part-of-speech (POS) tagger with bidirectional LSTM and conditional random field (CRF).
Developed an algorithm for relation extraction (RE) and entity resolution (ER) task for text datasets.

Estimation and Prediction of High-Speed Vehicle Trajectory Mar. 2015 - Jun. 2016
funded by Government Agency
Developed a trajectory estimation and prediction model with interacting multiple model (IMM), Kalman filter, and Gaussian processes model.