Daeun Jung

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Research Interests

Time series data, Feature selection, Interpretable machine learning, Federated learning

My research interest lies primarily in the fields of extracting representative features to help understand the mechanism of learning and get inference better with more emphasis on time series data. I believe there is passing through information, and I could find it from partial data information with data distribution changing. Here are some of my interests:

- Extract key features under data distribution changing environment
- Understand the causation and relation in variables of time series data
- Adapt Federated learning to overcome data imbalance in time series data

Education

Ewha Womans University Seoul, Korea

M.S., Department of Electronic and Electrical Engineering Mar. 2019 - Aug. 2021

Thesis: ***Meta Description Transform for Network Data Analytics***

- Advisor: Hyunggon Park
- Laboratory: Multiagent Communications and Networking Lab (MCNL)
- Total GPA of 4.05 / 4.30

B.S. in Engineering, Department of Electronics Engineering Mar. 2014 - Feb. 2019

- Major GPA of 3.67 / 4.30

Publications

1. **Daeun Jung**, Jungjin Lee and Hyunggon Park , **Feature Expansion of Single Dimensional Time Series Data for Machine Learning Classification**, *International Conference on Ubiquitous and Future Networks (ICUFN)*, Sep. 13 2021.
2. Joohong Rheey, **Daeun Jung** and Hyunggon Park, **Impact of Input Data Randomness on Training Performance of Autoencoder**, *The Korean Institute of Communications and Information Sciences (KICS) Summer conference*, Jun. 16 2021.
3. Yeonha Nam, **Daeun Jung** and Hyunggon Park, **On Improving Network Data Anomaly Detection Performance based on Meta Characteristics**, *The Korean Institute of Communications and Information Sciences (KICS) Summer conference*, Jun. 16 2021.
4. Jungmin Kwon, **Daeun Jung** and Hyunggon Park, **Traffic Data Classification using Machine Learning Algorithms in SDN Networks**, *Conference on ICT Convergence (ICTC)*, Dec. 21 2020.
5. **Daeun Jung** and Hyunggon Park, **An Iterative Algorithm of Key Feature Selection for Multi-class Classification**, *International Conference on Ubiquitous and Future Networks (ICUFN)*, Aug. 22 2019.
6. **Daeun Jung** and Hyunggon Park, **Machine Learning based Algorithm for Small Amount Multi -featured Data in Three Classes**, *Joint Conference on Communications and Information (JCCI)*.
7. **Daeun Jung**, Jungmin Kwon and Hyunggon Park, **Study on Impact of Class Combinations on Performance of Multiple Class Classification**, *The Korean Institute of Communications and Information Sciences (KICS) Fall conference*, Nov. 2019.

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8. Sunwoo Cho, **Daeun Jung**, Soohwan Lee, Myung-Ki Shin and Hyunggon Park, **Survey on Machine Learning Algorithms for SDN/NFV Automation**, *The Journal of Korea Information and Communications Society*, Jan. 2019.

Projects

Development of Distributed/Cooperated 5G+ Network Data Analytics Functions and Control Technology
Full-Time Researcher Apr. 2021 - *present*

- Developed an automatic feature extractor of time series data using partial data distribution change
- Analyzed the general data attributes extraction by discriminate raw data into noise and essential parts
- Keywords: *time-varying feature tracking, data distribution, feature extraction, representation learning*

Supervised Agile Machine Learning Techniques for Network Automation based on Network Data Analytic Function *Full-Time Researcher* Apr. 2019 - *present*

- Analyzed network traffic with Python, with focused on understanding and forecasting of dominant application to transfer knowledge for a network policy decision
- Collected network data and developing classification algorithm based on machine learning, to reduce the imbalance in gathered data and identifying the characteristics of each service with providing low latency
- Keywords: *meta information, machine learning, time series data classification*

Language-Conditioning Processing System based on Connectionism Model Machine Learning for Age-Related Language Impairment Prediction Jul. 2019 - Dec. 2020

- Developed key sentences of Language-Conditioning Processing System based on linear regression and feature selection to show the validity of suggested mild-cognitive evaluation test
- Keywords: *linear regression, feature selection*

Experience

Carnegie Mellon University Pittsburgh, PA
Visiting Researcher Jan. 2020 - Jul. 2020

Intensive AI Program fully funded by the Ministry of Science and ICT (South Korea)

- Developed a general model for a chatbot with profoundly experienced in Natural language Processing
- Managed team and established architecture for a chatbot that satisfied user requirements
- Processed with large-scale multimedia data to generate Generative Adversarial Network using AWS

Ewha Womans University Seoul, Korea
Full-Time Research Intern

Multiagent Communications and Networking Lab, Advisor: Hyunggon Park Jun. 2018 - Feb. 2019

- Surveyed for SDN/NFV network architecture and applied Machine Learning for 5G topology
- Studied the use of Omics data such as PPI data and clinical data to extract meaningful features.

Analog Circuits and Systems Lab, Advisor: Sungmin Park Dec. 2017 - Feb. 2018

- Studied electronic circuit used in Lidar and CMOS Amplifier for Gigabit Ethernet

Honors and Awards

Research Assistant Scholarship Ewha Womans University, 2020
Admissions Scholarship Ewha Womans University, 2019
DEAN'S List Ewha Womans University 2015, 2017 - 2018
National Grant Scholarship South Korea, 2015 - 2018

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Patents

1. **Daeun Jung** and Hyunggon Park, Meta Description Conversion Method for Network Data Analytics and Network Analysis Apparatus using the same, Korea Patent Application, filed on Oct. 21 2020 (Application no.10-2021- 0141124) *pending*.

Teaching Experience

Ewha Womans University 2019 - 2020

- Communications Laboratory (35327-01), Embedded System Design and Laboratory (36517-01)
- Conducted after-class lectures to demonstrate overall algorithms of programming assignments

Skills

Computer Programming

- Python(PyTorch); C/C++; MATLAB; R; AWS(EC2); LaTeX
- Linux (Ubuntu), Windows

English Proficiency

- New IBT TOEFL: Reading (28), Listening (28), Speaking (22), Writing (20)

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