

JEEHYUN HWANG

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<https://sites.google.com/view/davidhwang>

EDUCATION

Bachelor of Engineering, Computer Science

Mar 2016 - Present

Yonsei University, South Korea, Seoul

Expected graduation date, May 2022

RESEARCH INTERESTS

Neural Differential Equations, Graph Networks, Physics-informed Learning, Spatiotemporal Models

PUBLICATIONS AND PREPRINTS

Jeehyun Hwang, Jeongwhan Choi, Hwangyong Choi, Kookjin Lee, Dongeun Lee, Noseong Park, Climate Modeling with Neural Diffusion Equations. In *IEEE International Conference on Data Mining (ICDM)*, 2021

Seulki Yeom, Kyunghwan Shim, Jeehyun Hwang, Toward Compact Neural Networks via Energy-Aware Pruning. *preprint arXiv: 2103.10858*

RESEARCH INTERNS

Big Data Analytics Lab

Jul 2020 – Oct 2021

Undergraduate Research Intern

Department of Artificial Intelligence at Yonsei University. Advisor: Prof. Noseong Park

Application Platform Lab

Dec 2019 – Jun 2020

Undergraduate Research Intern

Department of Computer Engineering at Hongik University. Advisor: Prof. Yoon Young

WORK EXPERIENCE

Nota

Jan 2021 – Feb 2021

Research Scientist Intern

Research Department on Neural Network Compression. Advisor: Dr. Seulki Yeom

RESEARCH PROJECTS

Graph Neural Controlled Differential Equations

Jul 2021 – Oct 2021

Department of Artificial Intelligence at Yonsei University, Undergraduate Research Intern

Built spatiotemporal graph neural controlled differential equation (STG-NCDE), that combines NCDE technology with graph convolutional processing technology. Proposed STG-NCDE shows highest performance in both benchmark datasets of traffic forecasting and irregularly sampled traffic dataset.

Climate Modeling with Neural Diffusion Equations

Mar 2021 – Oct 2021

Department of Artificial Intelligence at Yonsei University, Undergraduate Research Intern

Built novel climate model based on neural ordinary differential equation and diffusion equation. Proposed NDE models not only spatiotemporal dependency but also noise in given dataset. NDE can be viewed as either one of neural partial differential equation or continuous version of diffusion-based graph neural network.

Neural Partial Differential Equations

Jul 2020 – Dec 2020

Department of Artificial Intelligence at Yonsei University, Undergraduate Research Intern

Novel partial differential equation-based approach for image classification, learning both governing equation and its solution for image classification. The proposed method shows better performance in terms of accuracy, robustness, and accuracy compared to neural ODEs and Isometric MobileNet V3.

Energy-Aware Pruning

Jan 2021 – Feb 2021

Nota, Research Scientist Intern

Proposed a new pruning method that quantifies the importance of each filter in neural network using nuclear norm. NN-pruning shows top accuracy with lowest FLOPs and parameters. It also shows high robustness among various data quality and quantity.

Network Traffic Anomaly Detection

Nov 2019 – Jul 2020

Department of Computer Engineering at Hongik University, Undergraduate Research Intern

Proposed a framework that performs anomaly detection (DDoS, brute force, portscan, etc.) of network packet dataset. Given feature sets were processed to create new features for density-based clustering on latent vector space. The proposed framework was used as part of government research.

INDEPENDENT COURSEWORK**Udacity**

AI Programming with Python Nanodegree

Jan 2019 – Mar 2019

SKILLS

Programming Languages: Python, R, Java, C, C++

Scripting Languages: NodeJS, MySql, JavaScript, PHP, HTML, CSS

Deep Learning Framework: (Proficient) Pytorch, (Familiar) Keras

LANGUAGE

Speak fluently in English

TOEFL: 109

GRE: 152(Verbal), 169(Quantitative), 4.0(Writing)

OTHER ACTIVITIES**Military Service**

Feb 2018 – Nov 2019

Served as Korea National Police Agency Auxiliary Police