Byungjun Yoon

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Research Interest

My research interest lies in various topics in **Machine Learning**, **Large Language Models**, and **their fundamentals, practical applications**. I am particularly interested in ML/AI topics that can enhance human productivity. Currently, the large language model and its factual content generation are my main focuses.

Education

Pohang University of Science and Technology — Pohang, Korea
B.S. in Computer Science (GPA: 3.6, Major GPA: 3.8) — *Feb 2019 – Present*

McLean High School — Virginia, USA
Sep 2015 – Jun 2018

Work

Devsisters — Seoul, Korea
Applied Data Scientist, Software Engineer — *Sep 2021 – Oct 2023, Full-time*

- Led the development of a Customer ROAS Prediction System as time-series prediction task for data-oriented UA marketing decisions.
- Improved the legacy MCMC-based Life Time Value Model.
- Implemented and maintained a PPO-based puzzle game automation agent.
- Researched a log-based user churn prediction algorithm for Cookie Run: Kingdom.
- Developed a distributed PyTorch dataloader wrapper for Parquet datasets in a distributed data environment.
- Developed a front-end webpage with Next.js.

Naver Webtoon — Pangyo, Korea
Research Intern, W-Tech Research Team: AI Automation — *Jun 2021 – Aug 2021, Internship*

- Researched unsupervised clustering of Webtoon drawing styles related to deformation to provide classification of art styles for ML tasks.
- Investigated Webtoon drawing style embedding model and similarity metrics based on a metric learning.

Reziena — Seoul, Korea
Intern — *Jun 2020 – Aug 2020, Internship*

- Researched the backend and ETL pipeline for data from IoT devices, developed a Skin Type Classification Algorithm, analyzed AWS Infra security, and implemented a Firebase authentication system.

Research

Method for Enhancing retrieval-augmented generation by prompting model — DI Lab
Advisor: Hwanjo Yu — *Sep 2023 – Present, Internship*

- Researching a new RAG framework, which inserts a prompting model between a retriever model and a generator model to improve the RAG framework in a black-box frozen generator environment.
- Preparing for the paper submission as a first author to top-tier conferences during 2024.

DARPA AI Cyber Challenge — Team Atlanta
Lead by Taesoo Kim @GaTech, Advised by Sangdon Park @MLLab — *Sep 2023 – Present, ML Task Member*

- Working as a team member in Team Atlanta consist of SSLab@GaTech, Hacking Lab@KAIST, ML Lab@POSTECH, Samsung Researach, and others
- Researching ML pipeline of automatic CWE patch (including vulnerability detection, patch generation)

Lung Abnormalities Detection — AIMI Lab
Advisor: Wonhwa Kim — *Oct 2020 – Jun 2021, Internship*

- Researched lung abnormality detection in chest x-ray images using R50-FPN for localization and abnormality classification.

Undergraduate Research Participation — CV Lab
Advisor: Suha Kwak — *Dec 2020 – Feb 2021, Internship*

- Studied Metric Learning, Computer Vision, and CS231n.
- Reproduced related papers: [1], [2].

Skills

Technologies: PyTorch, PyMC, Pyro, Slurm, TensorFlow, PySpark, Git, Docker, Kubernetes, Helm, Next.js, React, Unity ML-Agent, Flask, Node.js

Languages: Python, Java, C/C++, JavaScript/TypeScript, Solidity, Rust

Awards & Achievements

1st Place Award in the Postech Open Innovation Big Data Challenge

Projects

Deep Learning (CSED538) In-class Image Classification Competition | *Github*

- Developed an image classification framework based on ViT and RandAugment
- Achieved first place in the competition

Personality Prediction AI and App Development | *GitHub*

- Created a computer vision project to classify a person's MBTI with vision models
- Deployed a web application to serve our model in a web environment.

Solar Energy Prediction System | *Github*

- Developed a multivariate time-series prediction model for predicting solar energy production
- Received the First Place Award in the Postech Open Innovation Big Data Challenge

Relevant Coursework

Major coursework: Deep Learing (CSED538), Deep Learning NLP (CSED554), Implem. & Accel. for Machine Learning (CSED510), Software Design Methods (CSED332), Artificial Intelligence (CSED342), Data Analysis Using Tools (CSED490A), Operating Systems (CSED312), Computer Architecture (CSED311), Automata & Formal Languages (CSED341), Algorithm (CSED331), Object Oriented Programming (CSED232), Data Structure (CSED233), Discrete Math (CSED261), Digital Sys. Design (CSED273), Intro. to Computer SW Systems (CSED211), Applied Linear Algebra (MATH203),

Mentoring

POSTECH Intro. to Artifical Intelligence (AIGS101) TA

2nd POSTECH ON-LINE Hacking & Cyber Security Camp Mentor

5th POSTECH Computational Thinking Camp Mentor

Organizations

PLUS (POSTECH Labatory for Unix Security) *Aug 2019 – Present*
Member

PDAO (POSTECH Decentralized Autonomous Organization) *Apr 2022 – Present*
Committee Member

Others

TOEFL: 105/120 (2019)