Suro Lee

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Education

Columbia University Dec 2023 (expected)
Master of Science – Computer Science, Machine Learning Track *New York, US*
- GPA: 4.08

Korea Advanced Institute of Science and Technology (KAIST) Dec 2021
Bachelor of Science – Computer Science, Specialization in Artificial Intelligence *Daejeon, Korea*
Minor in Electrical Engineering

Relevant Coursework

Math: Real Analysis, Linear Algebra, Probability and Statistics, Differential Equations
Machine Learning: Computational Learning Theory, Statistical Learning Theory, Machine Learning, Artificial Intelligence, Computer Vision, AI Based Software Engineering, Natural Language Processing

Experience

Columbia University Sep 2022 – May 2023
Teaching Assistant (Spring 2023, Fall 2022) *New York, US*
- Competitive Programming: Supported 220+ undergraduate/graduate students prepare for ICPC contests by holding weekly office hours that cover solutions to challenging problems
- Computing for Business Research: Supported 70+ graduate students in Python, MATLAB, C, Bash, R, MySQL, TensorFlow, and Git by holding weekly office hours

Samsung Research Jan 2022 – Jul 2022
Software Engineer, Visual Perception Team *Seoul, Korea*
- AI Recipe Navigation: Integrated newest research from various Samsung AI centers into an interactive AI recipe navigation web demo using Node.js, Flask, Svelte, Bootstrap, and Mosquitto
- AI Cooktop: Developed an ingredient detection demo that uses a projector to display detection results on a kitchen table and suggest appropriate recipes based on the ingredients
- Both demos featured at Samsung Research Open Lab 2022

KAIST INA Lab Feb 2021 – Sep 2021
Undergraduate Researcher *Daejeon, Korea*
Project: Content-Aware and Task-Aware Variable Rate Image Compression using Compressive Autoencoders
- Exploited content-specific redundancies by training a compressive autoencoder with a dataset consisting of only one type of content such as faces (i.e., CelebA Dataset), achieving up to 2% improvement in terms of PSNR
- Optimized the compressive autoencoder for a task-specific loss instead of a perceptual loss, which outperformed JPEG in image classification up to 11% in terms of accuracy for low resolution images

Koh Young Technology Mar 2019 – Aug 2019
Research Intern, Machine Intelligence Team *Yongin, Korea*
- Implemented a prototype for a distributed, real-time SMT (surface-mount technology) inspection process using Apache Kafka, Apache Spark, and Apache HBase—which was later developed into a successful full-fledged product
- Achieved up to 10x speed up from batch processing, significantly decreasing the number of defects in the solder paste printing process

Selected Projects

Hybrid Adaptive Ant Colony System for TSP | *Metaheuristic Optimization* Sep 2020 – Dec 2020
- Sped up convergence speeds by using randomized local search at initial stages of ant colony system (ACS)
- Dynamically tuned ACS parameters throughout algorithm to encourage exploration away from local optima
- Outperformed randomized two-opt algorithm, and removed need to set experiment-specific parameters in conventional ACS

Masked Emotion Detection for COVID-19 | *Computer Vision* Sep 2020 – Nov 2020
- Led a team of four to improve emotion detection performance on masked faces by training deep learning model with synthetic masked data and existing masked datasets
- Extended Deep Emotion model, attaining improvements up to 16% on three emotion datasets

Extracurricular Activities

2022 ICPC North American Qualifier Feb 2023

- 4^{th} out of 64 teams in Columbia University

2022 ICPC Columbia University Local Contest Sep 2022

- 15^{th} out of 112 participants; solo contest

Technical Skills

Languages: Python, C++, C
Machine Learning: PyTorch, TensorFlow
Web Development: HTML, CSS, Svelte, Flask, Bootstrap, Node.js
Mobile Development: Android Studio, Flutter, Unity
Distributed Systems: Apache Kafka, Apache Spark, Apache HBase
Developer Tools: Docker, GitHub