Suro Lee

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Seeking M.S. in Computer Science

EDUCATION

KAIST (Korea Advanced Institute of Science and Technology) Sep. 2016 – Feb. 2022
B.S., Computer Science; Minor in Electrical Engineering; Specialization in Artificial Intelligence
Overall GPA: 3.61/4.3 (3.57/4.0)
A.I. specialization GPA: 3.92/4.3 (3.80/4.0)
Last two years GPA: 3.93/4.3 (3.81/4.0)

RELEVANT COURSEWORK

A.I.: Statistical Learning Theory, Machine Learning, Artificial Intelligence Based Software Engineering, Introduction to Computer Vision, Natural Language Processing with Python, Introduction to Artificial Intelligence
Mathematics: Analysis I, Probability and Statistics, Introduction to Linear Algebra, Calculus I, Calculus II, Discrete Mathematics

RESEARCH EXPERIENCE

KAIST INA (Intelligent Network Architecture) Lab Feb. 2020 – Sep. 2021
Undergraduate Researcher
Advisor: Professor Dongsu Han
Project 1: Using Side-Information for Task-Aware Image Compression

- Utilized side information extracted from the entropy of the compressed code channels to enhance image classification
- Extracted side information using two methods: convolutional bottleneck attention module, and feature-wise linear modulation

Project 2: Content-Aware and Task-Aware Variable Rate Image Compression using Compressive Autoencoders

- Conducted an experiment by using a dataset consisting of only one type of content such as faces (i.e., CelebA Dataset) to train the network to further exploit content-specific redundancies, achieving improvements in terms of MS-SSIM and PSNR.
- Optimized the compressive autoencoder for a task-specific loss instead of a perceptual loss, which outperformed JPEG in image classification, especially under low bits-per-pixel conditions.

Koh Young Technology, R&D Division Mar. 2019 – Aug. 2019
Research Intern
Advisor: Jaehyung Kim

- Implemented a prototype for a distributed, real-time SMT (surface-mount technology) inspection process using Apache Spark's Machine Learning Library
- Created and managed a distributed cluster and database for data streaming using Apache Kafka and Apache HBase
- Achieved a 5-10x speed up from batch processing, significantly decreasing the number of defects in the solder paste printing process
- My prototype was later developed into an extremely successful full-fledged product

SELECTED PROJECTS

Hybrid Adaptive Ant Colony System for the Travelling Salesman Problem
https://github.com/suro119/HAACS

- Used randomized local search to speed up convergence speeds at the initial stages of ant colony system (ACS)
- Dynamically tuned ACS parameters throughout the algorithm to encourage exploration away from local optima
- Outperformed the randomized two-opt algorithm, and conventional ACS

Masked Emotion Detection for COVID-19
https://github.com/suro119/Masked-Emotion-Detection

- Used synthetic masked data and existing masked datasets to improve emotion detection performance on masked faces
- Extended the Deep Emotion model, achieving improvements up to 16% on three emotion datasets

LEADERSHIP EXPERIENCE

International Conf. for the Integration of Science, Technology, and Society Sep. 2016 – Aug. 2017
Organizing Committee (Division of Global Partnership)

- Responsible for managing partnerships with foreign organizations and assisting international participants during the conference

AWARD AND GRANTS

Samsung Research Scholarship Mar. 2021
Samsung Research

- Received a $10,000 research grant given to outstanding students who display promising abilities in research

Short-term Undergraduate Research Grant Mar. 2021 – Aug. 2021
KAIST

- Received a $5,000 undergraduate research grant

Long-term Undergraduate Research Grant Mar. 2020 – Jan. 2021
KAIST

- Received a $8,500 undergraduate research grant

LINE Scholarship Nov. 2019
LINE Corporation

- Received a $4,000 scholarship given to 20 students in KAIST School of Computing

SKILLS

Programming Languages	Python, C, C++ (expert) | Java, MATLAB, LaTeX (proficient) | Scala, JavaScript (prior experience)
Deep Learning Frameworks	PyTorch, TensorFlow
Machine Learning	Deep Image Compression, Statistical Learning Theory, Self-supervised Learning
Natural Language Processing	Named Entity Recognition, Information Extraction, NLTK, spacy
Cloud-based Technologies	Apache Kafka, Apache Spark, Apache HBase
App-Development	Android Studio, Flutter, Unity, Firebase, Node.js, MongoDB
Language Proficiency	Korean (Native), English (Fluent)