Tung-Duong **Mai**

Software Engineer

Suwon, Gyeonggi Province, Rep. of KOREA

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Education

KAIST (Korea Advanced Institute of Science and Technology) *Daejeon, S.Korea*

Undergraduate *Feb. 2018 - Feb. 2022*

- B.S in Computer Science and Electrical Engineering, *magna cum laude*
- GPA: 3.9/4.3
- Full-ride KAIST scholarship

Work Experience

Samsung Electronics *Suwon, S.Korea*

Software Engineer (Full-time) *Mar. 2022 - Present*

- Developed AirPlay application on Samsung Smart TV, Smart Signage, and Smart Monitor, responded to market issues and acquired Apple certification for all TV products
- Ensuring a seamless experience for Screen Mirroring, Audio Mirroring, and Screen Casting from iPhone to Samsung products, including authentication, connection, streaming, display, control, and mouse/touch input.
- Awards: Idea Contest for new employees: 3rd prize Division-wide (6 departments) , 1st prize Department-wide (60 participants)
- Certification: Professional Programmer, Data Science
- Skill Stack: C++, C, Tizen, Linux

Onsquare *Seoul, S.Korea*

Software Developer Intern *Dec. 2020 - Feb. 2021*

- Built a web-based interactive image editor, supporting layering, clipping mask, and sequencing
- Implemented score image segmentation in Pytorch
- Skill stack: Typescript, Node.js, RE:DOM, Fabric.js, PyTorch

HayanMind Inc. *Daejeon, S.Korea*

Software Developer Intern *Jul. 2020 - Aug. 2020*

- Improved the video search engine result, reducing the no-result search by a half.
- Developed a script to retrieve information from Google Firestore and harnessed data by Google Cloud Storage and bigQuery.
- Built a model to predict the difficulty of the quiz with accuracy: 76%, deployable with Google AI Platform and able to make an online prediction with Python and REST API
- Skill stack: Machine Learning, Google Cloud Service, Firestore, Algolia, bigQuery, SQL.

Skills

Programming	[Proficient] **Python, C/C++, JavaScript** • [Familiar] **Matlab, React, C#**
Machine Learning	[Proficient] **PyTorch, scikit-learn**, • [Familiar] **Spark MLlib, Tensorflow**
Database/Backend	**MySQL, pandas, Spark, Firebase, GraphQL, Google Cloud Platform**
Frontend	**HTML, CSS, JavaScript, React**
Languages	**Vietnamese** (native), **English** (fluent), **Korean** (upper-intermediate)

Publication

Downscaling Earth System Models with Deep Learning *Washington D.C., USA*

Sungwon Park, Karandeep Singh, Arjun Nellikkattil, Elke Zeller, **Tung-Duong Mai**, Meeyoung Cha *Aug. 2022*

KDD '22: 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining

Active Learning for Human-in-the-Loop Customs Inspection *Journal*

Sundong Kim, **Tung-Duong Mai**, Thi Ng., Sungwon Han, Sungwon Park, Karandeep Singh, Meeyoung Cha *Jan. 2022*

IEEE Transactions on Knowledge and Data Engineering

Customs fraud detection in the presence of Concept Drift *Aukland, New Zealand*

Tung-Duong Mai, Kien Hoang, Aitolkyn Baigutanova, Gaukhartas Alina, Sundong Kim *Nov. 2021*

ICDM IncrLearn 2021

Response to COVID-19 with probabilistic programming *Journal*

Tung-Duong Mai, Assem Zhunis, Sundong Kim *Nov, 2022*

Frontiers in Public Health

Technical Projects

GINE (Geospatial INformation Encoded statistical downscaling) *Computer Vision*

Paper, **Github** *Sept. 2021 - Dec. 2021*

- Propose GINE, a new method for downscaling (super-resolution) climate simulations. The method provided more fine-grained climate data with useful regional information while preserving the characteristics of the climate simulation results.
- Propose two model-agnostic add-on modules for CNN-based super resolution model: Geospatial Guided Attention Module and Localization Guided Augmentation Module. Demonstrated each module improvement on SRResnet.
- Skill stack: Computer Vision, Super Resolution

Custom Fraud Detection *Deep Learning*

Github, **Literature**, **Publication** *Jul. 2020 - Sep. 2021*

- Built a simulation framework for customs selection considering the needs of customs administration.
- Proposed a new selection strategy based on state-of-the-art exploration and exploitation strategies and proposed an RL-based method to tune the strategy.
- Examined the long-term benefit of exploration strategy on realistic simulation setting.
- Skill stack: Pytorch, ML/DL/RL

ClebClub *Web development*

Github, **Prototype** *Sep. 2021 - Dec. 2021*

- Built a platform to facilitate collaboration of musical jamming.
- The interface supports exploration and viewing of existing jams, creation of new jams and collaboration on existing jams.
- Skill stack: HTML, CSS, Javascript, React, MaterialUI, Firebase

DeepSearch *SBSE, Deep Learning*

Github, **Presentation**, **Video**, **Report** *Sept. 2020 - Dec. 2020*

- Replicated the paper ”DeepSearch: A Simple and Effective Blackbox Attack for Deep Neural Networks”
- Improved the paper with the targeted attack, categorical feedback, and disperse grouping and expanded to the audio domain.
- Skill stack: Search-based optimization, Computer vision, Audio processing, Python, Pytorch, Tensorflow, Librosa, Scipy Audio

ProbProg_COVID *Data Science, Machine Learning*

Github, **Report**, **Medium** *Mar. 2020 - Jun. 2020*

- Simulated COVID-19 virus spread across the globe using Probabilistic Programming.
- Inferred the virus statistic by the Virus-model, estimated the policies affect on the virus spread by the Change-point model, created a model for virus spread by Generative model (SEIRD).
- Skill stack: Probabilistic programming, Python, Pyro

Metronome *Embedded Systems*

Github *Mar. 2022 - Jun. 2022*

- Simulated a metronome using the LEDs of Beaglebones
- The metronome is cross-developed using a Linux PC. It can be controlled by serial input from the PC or remotely controlled via network (UDP/TCP)
- Skill stack: C/C++, Embedded system, System programming, Network

Honors & Awards

International

2019 **Top Quartile**, Simon Marais Mathematics Competition *Asia-Pacific*

Domestic

2016 **First prize**, Vietnam National Physics Olympiad *Hanoi, Vietnam*

2015 **Second prize**, Vietnam National Physics Olympiad *Hanoi, Vietnam*

2019 **Bronze Prize**, The 11th creative design competition for the other 90% *Seoul, S.Korea*