**SANGDAE NAM**

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<https://nsd9696.github.io/personal_website/>

**EDUCATION**

**Konkuk University Seoul, Korea**

*Bachelors in Educational Technology and Computer Science*Mar. 2016 – Expected Jun. 2023

* CGPA: 3.4/4.0 (double major)
* *Dean’s List* for Academic Excellence in 2017, *Honor Roll* in Spring 2017 (GPA: 4.42/4.5)
* Relevant Coursework: Linear Algebra, Database, Object Oriented Programming, Fundamental Statistics
* Focus Area: AI Methodology (Active learning, Federated Learning, Knowledge Distillation), Computer Vision

**PROFESSIONAL EXPERIENCE**

**Intel Corporation** **Seoul, Korea**

*AI Research Engineer Intern* Feb. 2022 – Aug. 2022

* **Model performance acceleration**
  + Developed a **hyperparameter optimization module** in OpenVINO Training Extension Library.
  + Identified the inefficient use of worker nodes during Distributed Learning in the previous multi-GPU model architecture; increased the speed **1.5x faster** by enabling the persistence worker nodes allocation.
  + Decreased the model’s training time while maintaining its accuracy; experimented a hybrid-structure model composed of frozen parameter ONNX layers and active layers and increased speed **2-4x**.
* **Development of MLOps environment** 
  + Established a **computing resource monitoring system** and shared its experience with the team via seminar.
  + Created a server resource monitoring system with Grafana, Prometheus, and Docker.
* **Construction of WEB UI to show the performance of Data Shift Analysis (DSA) tool**
* Demonstrated the performance of DSA and a model drift test scenario with micro structured Flask servers and Streamlit UI.

**SmartMind (Techstars Alumni)** **Seoul, Korea**

*Data Science & Engineering Intern* Sep. 2020 – Dec. 2021

* **Lead Engineer, Development of data compression algorithm for efficient data science (Thanos)**
  + Developed a data compression algorithm using symbolic approximation and applied it to classification and image search tasks; successfully maintained more original features than the prior research (Patent #2).
* **Development of full-cycle machine Learning pipeline using data visualization web**
  + Developed automated ML pipelines for a top-tier steel company.
  + Developed an automated text analysis dashboard for a leading gas energy company.
* **Development of similar trademark search engine with Elasticsearch**
  + Developed Elasticsearch with Docker and **monitoring infrastructure** with Grafana, Prometheus, Alert Manager, and Teams webhook.
  + Recommended a similar trademark image with image-hash algorithm.

**SK Telecom Co., Ltd.** Seoul, Korea

*AI Engineer Intern* Aug. 2021 – Oct. 2021

* **Federated learning system and knowledge distillation**
* Developed an equipment condition diagnosis system through sound sensor.
* Built a convolutional autoencoder model and compressed it with **Knowledge Distillation.**
* Trained the model and deployed it on Raspberry Pi.

**PROJECT EXPERIENCE**

**Lulla** (child management edtech service) **Seoul, Korea**

*AI Engineer* Nov. 2021 – Present

* **Automation of child photo classification with face recognition**
* Developed a face recognition model for masked children with a mask generation algorithm and enhanced the model’s detection accuracy; developed serverless backend with Lambda (Patent #1, in progress).

**Child-Activity Analysis by AI**

* Credit-granted Research Project Aug. 2022 – Present
  + Analyze children’s activities in a classroom on action-recognition model by collecting and visualizing the data.
  + Finetuned the action recognition configuration model pretrained in MMaction2 library.

**Dehazing Transformer Model Development**

* Graduation Project, Konkuk University Mar. 2021 – Dec. 2021
* Developed an image dehazing model based on an IPT (Image Processing Transformer) model.
* Deployed service with stacks: Streamlit, GCP (Cloud Build, Container Registry, Kubernetes Engine), and Git.

**Prediction Model for Korean Baseball Teams**

* Data Science ‘Big Competition’ Project Dec. 2020
* Predicted each Korean baseball team’s batting average, earned run average, and win rate.
* Analyzed the baseball data using Sabermetrics and developed ensemble model containing time-series, decision tree regression, and LSTM for lower overfitting.
* Delivered a presentation as the representative work and mentored prospective competition participants

**League of Legend Highlight Generator** Jun. 2020 – Sep. 2020

* Team Project, Konkuk University
* Developed a video highlight generator with video and sound data.
* Built a multi-modal model with a video and sound highlight classification model (Paper #4)

**PATENTS & PUBLICATION**

**Patents:**

**[1]** Face recognition algorithm for mask wearing person with mask generation module [1] In progress

**[2]** High-capacity Structured Unstructured Data Processing Device & Method for High-Speed Search and

Artificial Intelligence Training (Reg. No.: 1022934270000) Aug. 2021

**[3]** Liquid and Solid Separating Device including Cup Lid Separator [3] (Reg. No. 1020342560000) Oct. 2019

**Paper:**

Cha, J.H., **Nam, S.D.,** and Jang, H.C.“League of Legend Game Video Highlight Generator with 3D CNN and Bi-LSTM,”

*The 22nd Conference on Electronics & Information Communications,* Vol.22, No.6, pp. 16-19, Nov. 2020.

**TEACHING EXPERIENCE**

*Lecturer on AI in Bank Employees,* Kookmin Bank Aug. 2021

* Lectured on few-shot learning and explainable AI to the bank employees.

*Lecturer on using API and Autonomous Logging,* Kongju National University Sep. 2021

* Guided and facilitated practice about using API with Flask, logging, and autonomous system.

*Invited Lecturer,* Forum on educational program for prospective non-major developers Mar. 2021

* Participated as a selected developer from Ministry of Employment and Labor

*Paper Writing Facilitator,* Korea Scholar's Conference for Youth Jun. 2016 – Aug. 2017

* Facilitated high school students to brainstorm and write an essay about education or psychology.

**LEADERSHIP EXPERIENCE**

*President,* **BOAZ** (Korea’s Bigdata Club) Jul. 2020 – Jul. 2021

* Managed 160+ students and held various conferences on machine learning or data engineering.
* Improved students’ research performance by building and establishing the Department of Data Engineering.
* Led Data Engineering Project; Disaster Monitoring Dashboard with Kafka and Twitter API

*Founder and President,* **Lever** (social enterprise) Jul. 2017 – Oct. 2019

* Led the social enterprise team solving waste issues.
* Invented a liquid and solid separating device including cup lid separator (Patent #3).
* *Second Place,* Konkuk University Idea Competition

**VOLUNTEER EXPERIENCE**

**SocSoc Camp** (elementary school education volunteer) Dec. 2016 – Jan. 2017

* Visited an elementary school in countryside and carried out job-shadowing activities with the students.
* Shared the volunteering experience in the camp’s journal.

**Dream Touch for All** (high school education volunteer) Sep. 2016 – Jun. 2017

* Taught math to high school students with poor access to quality education.
* Developed a customized, tailored math curriculum for students with low academic achievement.

**Korea-China Leaders Forum** (diversity project) Dec. 2016 – Jun 2017

* Assisted Chinese students’ adaptation to the Korean culture and society.
* Wrote “Educational Exchange System between Korea and China,” an essay on a joint Korea-China education program for cooperation with Chinese students.

**AWARDS & SCHOLARSHIPS**

*Second Place,* Data Science ‘Big Contest’ (among 450 teams) Dec. 2020

*Third Place,* Educational Technology Regular Exhibitions, Konkuk University

* “Online Learning with AI,” Action Recognition of Students Online Dec. 2021
* “Poem Therapy”, Poem Education Acceleration through VR contents Dec. 2016

*Excellence Award for Startup Club,* Lever Jan. 2018

*Second Place,* Konkuk University Idea Competition Oct. 2017

*Volunteer Commendation* for completing 100+ hours of community service. Dec. 2017

*Prime Talent Scholarship* for Academic Excellence, Prime Business Group Dec. 2017

*Startup Foundation Scholarships,* Startup Support Group Dec. 2017

**ADDITIONAL INFORMATION**

**Elite Program** Jun. 2017 – Dec. 2021

* Participated in an online MBA course and received a certification as a World Leader.

**TECHNICAL SKILLS**

**Programming**: Python, C, C++, SQL, Java, JavaScript, Go

**AI Engineering**: TensorFlow, PyTorch, ONNX, OpenVINO, Pandas, NumPy

**Data Engineering**: Kafka, Spark, Elasticsearch

**Server Development:** Linux, Docker, Kubernetes

**Cloud Engineering:** AWS, GCP, Azure

**Backend:** Flask, FastAPI, Django, Database (MySQL, MongoDB)

**Operation:** Terraform, Prometheus, Grafana, CI/CD (Jenkins, Gitlab)