Alexey Li

Seoul, South Korea | leealkon@gmail.com | +82-10-7759-7988 | portfolio | alexey-li | vlewv11

Summary

With a strong focus on **AI**, **Computer Vision**, and **Classic ML**, I specialize in building end-to-end pipelines from data engineering to model deployment. I have more than **3 years** of professional experience, working with 2D and 3D data, **CUDA-accelerated modeling**, and model **optimization** including **quantization** and **deployment** with **ONNX** and **TensorRT**.

Skills

Programming: Python, **MySQL**.
Data Processing: Pandas, **NumPy**, OpenCV, PIL, re, Matplotlib, Seaborn, Bokeh, PointCloud.
Model Development: Scikit-Learn, **TensorFLow**, **Keras**, **PyTorch**, ONNX, TensorRT, CUDA.
Tools: Git, Docker, Linux, SSH, JIRA, Confluence.
Additional Frameworks: PyQT, Flask, TKinter, ROS2.
Other: Quantization, Pruning, 4D Image Radar, Lidar, Projection, **Classification**, **Regression**, **Detection**, **Clustering**.
Language Proficiency: Russian – Native, English – Advanced, Korean – Intermediate (TOPIK 4).

Experience

AI Researcher — *Seoul, South Korea*
DeepFusionAI — *June 2023 – Present*

- Cleaned and preprocessed **4D Image Radar PointCloud** data to improve data quality. Transformed an **unsupervised** learning dataset into a **semi-supervised** format, eventually achieving a fully labeled dataset for training 3D object detection models.
- Modified an internal labeling tool by integrating **3D-to-2D projection** using camera calibration matrices, improving the accuracy and efficiency of annotation processes on **250%** in average.
- Optimized the data preprocessing pipeline, achieving a **3x increase** in speed for model input preparation.
- Developed various **3D detection** models on **point cloud** data, exploring fusion techniques with images to enhance model performance. Implemented real-time **ROS2** integration, publishing fused 3D detection and **2D BEV map** outputs for downstream autonomous system applications.

ML Engineer — *Sankt-Petersburg, Russia*
NOTA — *Jan 2022 - Mar 2023*

- Developed a video processing software to extract statistical data from security camera footage, leveraging **YOLOv10** for object detection and **ByteTrack** for multi-object tracking within predefined regions of interest **(ROIs)**.
- Optimized polygon-based attendance checks by reducing intersection calculations to **O(1)** time, resulting in a **3x performance** improvement.
- Optimized, **quantized** the model, converting it to **ONNX** and **TensorRT** format for efficient inference and deploying it with reduced computational overhead. Achieved a **4x inference speed** improvement per frame, enabling real-time processing. Reached an **mAP** (Mean Average Precision) of **0.86** for the human class, significantly improving detection performance in surveillance scenarios.

Projects

FlappyBird AI Bot — *Project Link*

- FlappyBird using NEAT (NeuroEvolution with Augmented Topologies) framework with integrated **Genetic Algorithm**, tuning the model and population genomes as soon it reaches the game **score 500**.

Mail Box Spam Filter — *Project Link*

- Implemented a spam filter using a combination of **Naive Bayes** and **Random Forest** models. The dataset for this project was manually created by labeling every message as either ”spam” or ”ham” (not spam) based on a personal mailbox. The dataset includes several features: username, email domain, subject, and text body.

Education

Pusan National University — *Busan, South Korea*
BS in Computer Science and Engineering — *Sep 2019 – Sep 2023*

- **Thesis**: ”Tailoring Music for Every Generation”. Built **CNN** age recognition model **VGG19** with **6.32 MAE** for every age, connected **Spotify** recommendation system to listen demos (Project link)