Alexey Li

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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*

- Led the end-to-end ML workflow on **4D Image Radar PointCloud** data, including EDA, cleaning, feature generation, and labeling. Converted an **unsupervised** dataset into a fully labeled one for training **3D object detection** models.
- Improved internal labeling efficiency by integrating **3D-to-2D projection** via camera calibration matrices, increasing annotation accuracy and speed by **250%**.
- Refactored and accelerated the data preprocessing pipeline, achieving a **3x speedup** for model input preparation
- Built and evaluated **3D detection** models with sensor fusion (radar and image data), applying and comparing various architectures. Deployed models with real-time **ROS2** integration, publishing **fused 3D detections and 2D BEV maps** for downstream autonomy modules. Contributed to model improvement through continuous evaluation and iterative refinement. Explored novel geospatial and sensor-fusion-based approaches to boost detection accuracy.

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

- Developed an end-to-end video analytics pipeline to extract insights from surveillance data. Used **YOLOv10** for real-time object detection and **ByteTrack** for multi-object tracking within **ROIs**, enabling behavior analysis and footfall tracking.
- Enhanced ROI intersection logic for efficiency, reducing computational complexity to **O(1)**, resulting in **3x faster** performance. Optimized and **quantized** models, converting them to **ONNX/TensorRT** for accelerated inference. Achieved **4x speedup** per frame and **mAP = 0.86** on human detection, enabling robust deployment in production surveillance environments.
- Integrated model monitoring and evaluation workflows to continuously assess accuracy and operational performance in production 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)