Junghwan Yim

Graduate Student Researcher

Data Scientist and Software Engineer solving problems with having broad data domain knowledge, development skills and deep understanding of AI, mathematical, or statistical modeling skills. Having experiences in analyzing, modeling, visualizing, and deploying various typed data as well as building the data pipeline, web, app service in both academic and industry fields. Having experiences leading teams or communities as a president or a project manager and achieving remarkable achievement with teams. Learn fast and solve problems by applying it by sharing what I learn with the team, thus maximizing the team's productivity.

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WORK EXPREIENCE

Graduate Student Researcher
01/2021 - present
University at Buffalo
Buffalo, NY

Model for Elevation Map Prediction and Synthesis
- Generated dynamic occupation map and elevation map distinguishing static object or dynamic object on the road from KITTI Dataset and ROS grid map package.
- Developing GAN model to predict the next frames of elevation map and generating one elevation map synthesizing multiple elevation map from different vehicles.

Post-Processing for Static Object Detection (Traffic Sign Detection)
- Composed knowledge graph of static object on the road with leading object detection team in Autonomous Vehicle Laboratory of the University at Buffalo (CAVAS).
- Trained Yolo and RCNN models for traffic sign detection based on the knowledge graph and Mapiliary Traffic Sign Dataset, and the best model among models recorded 70% accuracy.
- Achieved stable detection performance using Kalman-Filter algorithm and calibration model and composed ROS package mapping detected the traffic signs and the distance with the traffic sign into HD (High Digital) Map with collaborating the CAVAS members.

Lane Detection Model with Reinforcement Learning
- Implemented lane detecting agents with reinforcement methods, A2C and DQN, in synchronous and asynchronous environments in CARLA simulation.

Data Scientist / Software Developer
05/2019 - 12/2020
Republic of Korea Cyber Operation Command
Seoul, Republic of Korea

Developing Intelligence Operation System
- Developed an entire data-driven intelligence system (Data Pipeline) collecting data and assisting analysis using TensorFlow Server, Apache Ecosystem (Hadoop, Kafka, and Spark) and ELK stack with the operation and development team.
- Developed Natural Language Processing, Image Processing, Malware detection modules using Machine Learning, Deep Learning, and Reinforcement Learning to analysis the collected data with TensorFlow, Keras, and Pytorch.
- Awarded the Meritorious Service Medals for contribution and excellency by Software Development from Corp Commander and Commander of ROK Cyber Operations Command, two-star rear admiral.

Designing Inventory Management and Recipe Recommend System
- Designed and developed demo for a data-driven recipes recommendation system for offering customized recipes based on the TensorFlow server for object detection in refrigerator of clients and personal information of the clients using TensorFlow Server, Apache Ecosystem (Hadoop, Kafka, and Spark) and ELK stack.
- Awarded the Meritorious Service Medal in K-Startup Contest from Commander of ROK Personnel Command, two-star rear admiral.

PROJECTS

Stock Investment Agent with A2C
- Trained an investment agent less losing money in a bear market with the stock data of Samsung Electronics and Hyundai Motors from 1980 to 2010 with A2C Model
- Implemented an auto trading program using Volatility Breakout Strategy and 14-days Moving Average, made a 3% return on Bitcoin.

Rumour Detection with BERT and GCN
- Trained BERT and 3-layered GCN model classifying the stances of the text and comments of rumoureval 2019's Twitter and Reddit data and returning the probability of whether it is a rumor or not. Stance classification recorded an accuracy of 67%, and rumor detection recorded an accuracy of 70%. This study was selected as the best study in the Advanced Natural Language Processing class.

Music Sample Detection
- Trained various the number of CNN layers and BiRNN layers to detect two samples in Prime Loops Dubhop Beats in 100 soundtracks made by Logic Pro, and to return the probability of real time sample, and recorded up to 63%

SKILLS & COMPETENCIES

C++ | Python | Java | Javascript | Typescript | MATLAB | Scala | Shell Script | Keras | Pytorch | OpenMP | MPI | Hadoop | Kafka | Spark | Elasticsearch | Kibana | Docker | Kubernetes | ROS | Android Studio | MySQL | Postgresql | MongoDB | Data Intensive Computing | Machine Learning | Deep Learning | Reinforcement Learning

CERTIFICATES

Data Intensive Computing
University at Buffalo

Probabilistic Graphical Model
Stanford University (Coursera)

EDUCATION

University at Buffalo 2016 - 2022
Master of Science in Physics
Bachelor of Science in Computational Physics
Bachelor of Science in Computer Science

State University at New York in Fredonia 2013 - 2016
Bachelor of Science in Physics with Pre-Law
Bachelor of Science in Business Administration (Music Industry)