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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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)

CERTIFICATES

Data Intensive Computing — **University at Buffalo**

Probabilistic Graphical Model — **Stanford University (Coursera)**

AWARDS

Meritorious Service Medal — **Republic of Korea Personnel Command**
- Awarded in K-Startup Contest by designing and developing ingredient managing system and recipe recommend system from the commander of ROK Personnel Command, two-star rear admiral.

Meritorious Service Medal — **Republic of Korea Cyber Operation Command**
- Awarded for contribution and excellency by software development from the commander of ROK Cyber Operation Command, two-star rear admiral.

SKILLS & COMPETENCIES

Research | ETL | NLP | Image Processing | Machine Learning | Deep Learning | Reinforcement Learning | C | C++ | Python | Java | Javascropt | R | Scala | SAS | MATLAB | SQL | No-SQL | numpy | pandas | seaborn | scikit-learn | OpenCV | nltk | Keras | Pytorch | TensorFlow | ROS | Elasticsearch | Spark | Hadoop | Airflow | Docker | Kubernetes

WORK EXPREIENCE

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

2-Step Biometric Authentication by IMU Sensors at Phone and Watch
- Developing a model authenticating users by comparing transforming function between IMU sensor signals at phone and watch for each person with signal processing and GAN model.
- Developed applications for experiments and tests by mobile android and system programing with reverse engineering.

Model for Elevation Map Prediction and Synthesis
- Generated dynamic occupation maps and elevation maps distinguishing static object or dynamic object on the road from KITTI Dataset and ROS grid map package.
- Predicted the next frames of the maps with sensor fusion of IMU sensor data at vehicles and BEV elevation map from LiDAR data
- Reduced computational cost by merging two different maps than merging two differnt elevation maps from vehicles.

Post-Processing for Static Object Detection (Traffic Sign Detection)
- Composed the 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 and lighter detection performance using Kalman-Filter and SLAM 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.

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 Reverse Engineering, Machine Learning, Deep Learning, and Reinforcement Learning to analysis the collected data with TensorFlow, Keras, and Pytorch.

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 ingredients and user data.
- Improved recogniton model for ingredients in a refregiator by analyzing and Collecting user data and ingredients in their refregiator.

PROJECTS

Tastie, Mobile Application
- Developed and operated a mobile application recommending restaurants based on the keywords to avoid suffering searching good restaurants, which in total reached 10K+ users in 2 months.
- Analyzed keywords, user data, restaurant data collected by quantitating and qualitative methods to improve user experience.
- Improved recommending system and user interface by the discovered insight in analysis with machine learning technique.

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.