zexihan.com/portfolio
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Zexi Han

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Work Experience

Software Engineer at Suning Commerce R&D Center – Applied AI, Palo Alto Aug 2019-Present

- Lead applied research of the state-of-the-art 3D (point cloud) deep learning algorithms in pedestrian detection and tracking for automated convenience stores.
- Develop large-scale 3D object detection datasets in an iterative and evolutive annotation process.
- Optimize supervised deep learning models with PyTorch and the associated point cloud preprocessing/postprocessing code in Python/C++.
- Read papers, implement described models and algorithms, adapt them to our settings, and drive up internal metrics.

Data Scientist Co-op at Rue Gilt Groupe – Reseller Identification, Boston Jan 2018-Jun 2018

- Worked on feature engineering and training XGBoost model from an iterative perspective to identify resellers from over 2 million buyers, and put it into production to provide them with personalized boutique recommendations.
- Built docker apps for feature extraction, training, and inference which were deployed to Amazon ECS and Airflow.
- Maintained daily ETL process for the recommendation system with robust SQL on Snowflake.

Research Assistant at National Laboratory of Pattern Recognition – Visual Search, Beijing Aug 2015-May 2016

- Designed and built a Three-stage Hybrid Visual Search Framework (Classification, Object Detection and Matching) to the task of same-style product image retrieval with convolutional neural networks.
- Evaluated the performances of multiple CNN backbones on Taobao 5M commercial product images using Caffe.

Projects

SLAM Path Planning and Navigation for Home Service Robot, Udacity Jul 2020-Present

- Navigate a robot to autonomously map an environment using a SLAM package.
- Interface a robot with a sampled-based and probabilistic path planning and navigation ROS package to move objects within an environment.

Self-Driving Car System Integration, Udacity Jan 2020-May 2020

- Maneuvered a car around a virtual highway while stopping at red traffic lights by using perception, path planning and control modules through system integration.
- Identified the lane boundaries from a front-facing camera on a car with distortion correction and gradient thresholding.
- Trained deep learning models with Tensorflow and transfer learning to classify traffic signs.
- Applied Extended Kalman Filter in C++ for sensor fusion to predict with certainty location of other vehicles.

TripElf – Interactive-Map with Neighborhood-Level Airbnb Review Summarization, NU Jan 2019-Apr 2019

- Applied text models to summarize Airbnb reviews and generate neighborhood overview from travelers' point of view.
- Implemented an interactive map with React and Mapbox GL JS for visualization of neighborhood profiles.

Parallel Matrix Multiplication in MapReduce, NU Oct 2018-Dec 2018

- Implemented parallelization mechanisms for large matrix multiplication in MapReduce in distributed settings, including Horizontal-Vertical Partitioning and Vertical-Horizontal Partitioning for synthetic dense and sparse matrices.
- Measured speedup and scalability performance for the two intelligent partitioning methods on Amazon EMR and S3.

Technical Skills

Languages:	C++, Python, Java, JavaScript, Typescript, HTML, CSS, SQL, R, MATLAB
Web App Dev:	React, Redux, Angular, Bootstrap, jQuery, Node.js, Express, Spring Boot, JPA, MongoDB, mongoose
Tools:	PyTorch, Tensorflow, OpenCV, PCL, MapReduce, AWS, ROS, Pandas, scikit-learn, Docker, three.js, Git

Education

Northeastern University Boston, MA

*M.S. in **Data Science**, GPA: 3.8* Jan 2017-May 2019

Beijing University of Posts and Telecommunications, Joint Program with QMUL Beijing, China

*B.S. in **Telecommunications Engineering** with the First Class Honors, GPA: 3.5* Sept 2012-Jun 2016

- *Awards:* Outstanding Final Project (Rank 12/680)