Zexi Han

(617)816-9210 | zexihan@outlook.com

🔗 zexihan.com/portfolio | 🔗 linkedin.com/in/zexihan | 🔗 github.com/zexihan

1094 Robbia Dr
Sunnyvale, CA 94087

PROFESSIONAL SKILLS

Programming Languages:	C++, Python, Java, JavaScript, R, MATLAB
Web Development:	Node.js, Spring Boot, Redis, Memcached, Zookeeper, MySQL, MongoDB, Cassandra, React, Angular
Libraries and Frameworks:	MapReduce, Linux, AWS, Docker, Git, PyTorch, TensorFlow, OpenCV, PCL, ROS, Pandas, scikit-learn

EDUCATION

Northeastern University, Boston, MA, USA   Jan 2017 – May 2019
*Master of Science in **Data Science***   GPA 3.8 / 4

Beijing University of Posts and Telecommunications, Beijing, China   Sept 2012 – Jun 2016
Joint Program with **Queen Mary University of London**   GPA 3.5 / 4
*Bachelor of Science in **Telecommunications Engineering** with the First Class Honors*
- Awards: Outstanding Final Thesis (Rank top 2%)

PROFESSIONAL EXPERIENCE

Software Engineer, Suning Commerce R&D Center | Applied AI Lab, Palo Alto, CA   Aug 2019 – Aug 2020

Area: Computer Vision, 3D Deep Learning | Project: Point Cloud Object Detection, Video Content Understanding
- Led applied research of the SOTA point cloud pedestrian detection and tracking algorithms for automated convenience stores; the model was optimized to reach an average precision of 0.93.
- Developed large-scale 3D pedestrian detection datasets in an iterative and evolutive annotation process.
- Optimized the speed of the associated real-time point cloud preprocessing/postprocessing from seconds to milliseconds in C++.
- Achieved automatic short video tagging by integrating OCR, image classification, and face recognition modules.
- Created CRUD RESTful service APIs using Flask and MySQL to access video tagging data updated on a daily basis.

Data Scientist Co-op, Rue Gilt Groupe, Boston, MA   Jan 2018 – Jun 2018

Area: Machine Learning, Data Engineering | Project: Reseller Identification
- Worked on feature engineering and XGBoost model training from an iterative perspective to identify resellers from over 2 million buyers, which was put into production to provide resellers with personalized boutique recommendations.
- Built docker apps for the pipeline of feature extraction, model training, and inference, and deployed to Amazon ECS and Airflow.
- Maintained daily ETL process for the recommendation system with robust SQL on Snowflake.

Research Assistant, National Laboratory of Pattern Recognition, Beijing   Aug 2015 – May 2016

Area: Deep Learning, Mobile App Dev | Project: Visual Search
- Designed and built a Three-stage Hybrid Visual Search Framework (Classification, Object Detection and Matching) to the task of same-sku product image retrieval with convolutional neural networks (CNN).
- Evaluated the performances of multiple CNN backbones on Taobao 5M commercial product images using Caffe.
- Developed the backend of demo mobile application and achieved real-time image retrieval performance.

PROJECT EXPERIENCE

Self-Driving Car System Integration, Udacity   Jan 2020 – May 2020
- Integrated perception, path planning and control modules in ROS to maneuver a simulated autonomous vehicle on road while being able to stop at red traffic lights, change lines, and safely overtake vehicles in front.
- Identified the lane boundaries from a front-facing camera with image distortion correction and gradient thresholding techniques.
- Finetuned pretrained CNN models for transfer learning with TensorFlow to recognize traffic signs.
- Applied Extended Kalman Filter in C++ for sensor fusion to predict locations of other vehicles with certainty.

TuneS – Social Music Website, NU   Feb 2019 – Jun 2019
- Developed a single page application using MERN stack and Spotify Web API that serves for music fans to engage with other music lovers and discover new songs, albums, and artists.
- Handled OAuth authorization, like/share/follow functions with a RESTful API built in Express and MongoDB backend.
- Improved database concurrency performance by integrating Redis as cache for counters, music charts, and other services.
- Designed and developed a responsive and interactive React frontend utilizing Bootstrap and AJAX techniques.

TripElf – Interactive-Map Web App with Neighborhood-Level Airbnb Review Summarization, NU   Jan 2019 – Apr 2019
- Proposed and developed an application to help travelers pick their favorite short-term rental neighborhoods before traveling by demonstrating the machine-generated overviews of the neighborhoods.
- Implemented an interactive map frontend with React and Mapbox GL JS for demonstration of neighborhood profiles.
- Experimented to optimize the scalability by horizontal data sharding with consistent hashing for the Cassandra database.
- Applied text models, such as KL-Sum, LDA-Sum and ELMo, to summarize Airbnb reviews and generate neighborhood overview of different aspects from travelers' point of view, including entertainment, noise, safety, transit, expense, and host review.

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.