ESHA WANG

615 Pavonia Ave, Apt 3506
Jersey City, NJ 07306

esha.wang@gmail.com
(309) 530-9780

EDUCATION

Sept 2018 – Apr 2020 **Stanford University**
M.S. in Statistics, GPA: 3.9/4.0

Sept 2011 – Jun 2015 **California Institute of Technology**
B.S. in Applied and Computational Mathematics, GPA: 3.5/4.0

WORK EXPERIENCE

Jan 2021 – Present **Nokia Bell Labs – New Providence, NJ**
AI/ML Radio Systems Research Scientist
- Researched and developed DeepRx, a CNN-based deep learning receiver that takes in a received signal as input and outputs the original transmitted 0/1 bits. Personal contribution to neural network architecture resulted in up to 10% improvement in accuracy.
- Led the development of ML models for traffic sensing, using mm-wave data to detect location, size, and speed of vehicles at a traffic intersection. Tools used include Detectron2, Faster R-CNN, and sematic segmentation.
- Implemented Kalman filter-based algorithm to fuse camera data and IMU sensor data to accurately locate the x-y-z position of a drone in real time. Resulting error between drone's true and predicted location was < 0.05m.

Jul 2019 – Sept 2019 **Nokia Bell Labs – Sunnyvale, CA**
FxIn Machine Learning Summer Research Intern
- Designed environment-invariant CNN models to classify indoor human activity using WiFi Channel State Information data, with peak accuracy of 78% for unseen person, movement pattern, and furniture orientation.
- Full responsibility over data collection, cleaning, and processing using NumPy, scikit-learn, and Pandas.
- Presented live demo with real-time labeling of unscripted human activity to president of Bell Labs and various business units. Model correctly labeled all activities over three minutes of live testing.

Aug 2016 – Sept 2018 **Oracle Corporation – Santa Clara, CA**
Software Engineer II
- Fixed security vulnerabilities in Oracle Linux and Solaris 12 using RPM SPEC files and bash tools.
- Upgraded Free and Open Source Software components to latest versions and integrated them into Solaris 12.

Aug 2015 – Jun 2016 **SBB Research Group LLC – Northbrook, IL**
Applications Developer
- Implemented mathematical models to estimate implied volatilities of structured notes.
- Analyzed SPX/RUT data using MySQL to predict future behavior of indices with inter/extrapolation techniques.
- Developed a comprehensive investment analysis of properties in Chicago using Google Maps API.

ACADEMIC PROJECTS

Winter 2020 **Sarcasm Detection (CS224n Main Project)**
- Developed content embedding CNN for generalized sarcasm detection over a multitude of corpus datasets, including Twitter/Reddit posts and The Onion/HuffPost news headlines.
- Main project proposal linked here (Google Drive) or here (GitHub).

Fall 2019 **Introduction to Optimization, Accelerated (MS&E211X Projects)**
- Analyzed reinforcement learning problems (linear programming), information market problems (linear programming), transportation problems (simplex method), robust portfolio management (gradient projection), and Fisher market equilibrium (ALM/ADMM).

Fall 2018 **Facial Expression Recognition (CS229 Main Project)**
- Developed predictive models including a baseline 3-layer CNN, ResNet50, and fine-tuned models using pre-trained weights and image augmentation, powered by a single Nvidia GTX 960 GPU.
- Performance of 66.1% accuracy on the FER2013 dataset (consisting of seven labeled facial expressions) reached #5 on the 2013 Kaggle leaderboard.
- Report linked here (Google Drive) or here (GitHub).

Fall 2018 **Predicting the Success Rate of Speed Dating (MS&E226 Main Project)**
- Developed and compared several predictive models, such as linear regression, logistic regression, naive Bayes, and decision trees, with overall best model being linear regression with interaction terms.
- Statistical inferences conducted include normal and clustered bootstrapping, multiple hypothesis testing such as Bonferroni Correction and Benjamini-Hochberg, and statistical significance of coefficients.
- Report linked here (Google Drive) or here (GitHub).

RELEVANT SKILLS

Machine Learning (CNN, RNN, LSTM, ResNet), Data Analysis, Statistical Modeling, A/B Testing, Computer Vision, NLP

PROGRAMMING LANGUAGES

Proficient – Python, R

Intermediate – SQL, MATLAB, C/C++

LANGUAGES

English (native), Chinese (fluent)

INTERESTS

Photography/Videography, Blogging (link to website here)