Alexander Xiong

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EDUCATION

Rice University, Houston, TX | GPA: 3.77 / 4.0 **Expected Graduation: May 2022**
B.S. in Computer Science | B.A. in Statistics | Minor in Financial Computation and Modeling
Relevant coursework: Advanced Object Oriented Programming • Operating Systems • Compilers • Distributed Program Construction • Reasoning about Algorithms • Probabilistic Algorithms and Data Structures • Parallel Programming • Applied Machine Learning and Data Science • Program Design (Java) • Computer Systems (C) • Computer Engineering/Architecture • Statistical Machine Learning • Quantitative Financial Risk Management • Tools & Models of Data Science • Statistical Inference • Discrete Mathematics

SKILLS

Programming Languages: Python, Java, SQL, HTML/CSS/JavaScript, C++, C, C#, R
Software, OS, Tools: Flask, React, Node.js, Keras, TensorFlow, Android, MySQL, NumPy, Pandas, Selenium, Linux, Jackson (Java), Agile, Gazebo, Rviz, Ros, Hadoop, Postman, AWS, Git, Vim, bash

EXPERIENCE

Software Development Engineer Intern **| Amazon Lab126 | Sunnyvale, CA** **May 2021 –- August 2021**
- Built new autonomous features in a version one stealth consumer device by adding intelligence of surroundings and device status.
- Implement cloud based services to the consumer device in an Android development environment.

Machine Learning Intern **| Virginia Modeling, Analysis and Simulation Center | Norfolk, VA** **June 2020 –- November 2020**
- Designed and built a federated machine learning platform to evaluate malicious attacks posed by participants for different machine learning architectures using Python and Keras; tested collusion-based membership attacks using adversarial examples.

Student Researcher **| Rice University Kavraki Lab | Houston, TX** **May 2020 –- August 2020**
- Processed experienced-based motion planning datasets for Fetch and UR5 robots using C++ leveraging the Open Motion Planning Library (OMPL); constructed scenarios for realistic motion planning testing using Gazebo, Rviz, and Ros frameworks.

Machine Learning Researcher **| NSF REU in Big Data Security & Privacy | Microsoft** **May 2019 – March 2020**
- 1st author of IEEE IPCCC 2020's referred paper: Privacy Preserving Inference with Convolutional Neural Network Ensemble.
- Designed a privacy preserving inference algorithm via an ensemble of neural networks, enabling prediction on secure data using fully homomorphic encryption in C#; achieved 94% accuracy in individual vs. 97% accuracy in ensemble models.
- Reconstructed an unencrypted Microsoft's CryptoNets using Python and Keras to train the encrypted ensemble model.

PROJECTS

FSP-Duncan | Flask, MySQL, Python, and HTML/CSS | http://duncanfsp.pythonanywhere.com/
- Developed a CRUD web application using Flask, MySQL that fuses a job board for students, a point system for completed jobs, and job forms for student availability to manage 100+ students for a residential college at Rice.
- Admins input jobs; students fill out forms to sign up for jobs, where students are algorithmically assigned jobs and notified.

Fake News Detection | Python, Numpy, Pandas, Sklearn
- Implemented four machine learning-driven bloom filters and examined the accuracy-memory tradeoffs toward fake news datasets.
- Applied natural language processing (NLP), TF-IDF, to vectorize fake new articles and random forest classification to provide training data for the adaptive bloom filters to optimize memory usage, resulting in a 40x reduction in false positive rates.

Schlumberger Datasets | Python and Plotly | HackRice 8 Competition | https://devpost.com/software/slb-datasets
- Created a user-friendly web application to graphically represent 130,000+ Schlumberger sensor datapoints as multiple interactive log-scaled heatmap charts that is toggle-able to maximize viewing accessibility.

LEADERSHIP

CS Teaching Assistant **| Rice University** **August 2020 – May 2021**
- Served as a Teaching Assistant for COMP 382: Reasoning about Algorithms. Conducted weekly lab sessions for additional problem solving and proof writing practice. Graded assignments, weekly TA office hours for students. Roughly ~150 students.

Teaching Instructor **| Rice REMIXCS** **January 2019 - May 2019**
- Conducted CS outreach by teaching a class of high schoolers in the greater Houston community weekly to inspire future computer scientists, specifically underrepresented minorities in CS.

Committee Member **| Rice CS I/O** **August 2018 - May 2019**
- Facilitated an open communication between 400+ CS undergraduates and the CS Department using forums and newsletters.

AWARDS

HackRice 8, 2nd place Data Sci. • Siemens Competition Semifinalist • T. J. Watson Fellow • NSF Travel Awardee
American Regions Mathematics League (ARML) NC team (2015, 2016, 2017) • Bronze, USA Mathematical Talent Search (2016)
AIME qualifer (2016, 2017) • Honor Roll, Top 2.5% in American Mathematics Competition (AMC) 10, 12 (2015, 2016, 2017)