Eric Pryzant

Cell 713-857-0445 | 4527 North Lamar, Austin, TX 78751 | Eric.Pryzant@utexas.edu

EDUCATION

Master of Science in Computer Science, *University of Texas at Austin* 2019 – Present

- GPA 4.00/4.00; GRE Score Composite 332/340 (99%); Quant 168/170; Verbal 164/170
- Expected graduation date: May 2021
- Currently conducting research into the application of fully convolutional neural networks for semantic segmentation to improve object detection and image classification for self-driving vehicles

Bachelor of Science in Mechanical Engineering, *University of Texas at Austin* 2011 – 2015

- Senior Design Project: Built high-temp high-pressure control loop, wrote control system software (C++)
- Sponsored Research: Wrote all software (C++/LabVIEW) for experimental laser-powered 3D printer's real time operating system and thoroughly tested all subsystems, ran on TI cRIO hardware (FPGA)

CODING SKILLS

Proficient in Python, JavaScript, SQL, C/C++, Java, Kotlin, Go with experience in C#, Scala, Rust, Swift

PROFESSIONAL EXPERIENCE

SpaceX (Space Exploration Technologies) 2020

Associate Software Engineer – Process Dev. Team

- Built binary classification ML model to evaluate risk for tool out-of-tolerance events using NLP feature extraction, SMOTE class balancing, and CbLOF anomaly detection; achieved 96.7% accuracy
- Created web-based workload reduction tool (jQuery/Flask) using model output (above) to filter out-of-tolerance investigations; enabled streamlined closure based on risk factors; est. ~100 hrs. saved per year
- Helped maintain legacy Angular web-app used by engineers to track open tickets, automate tedious tasks
- Worked on ML model used to evaluate Issue Ticket risk; reduced server downtime, added coverage
- Developed scripted job w/ python to automatically populate expiration dates to resolve launch issues
- Overhauled SQL database design for part inventory and procurement to unify entire company's part portal

Schlumberger (Oil and Gas)

Reliability Engineer – Blow Out Preventer (BOP) Reliability Team 2017 – 2018

- Worked hand-in-hand with clients, senior managers, and design engineering to drive rapid resolution to product failures, including leading investigations and implementing corrective actions with clients
- Subject matter expert for BOP preventive maintenance data science team working to anticipate and prevent equipment failure; modeled component failure rates and forecasted repairs for clients
- Delivered statistical model for failure due to plating corrosion, leading to critical design changes

Manufacturing Engineer – Machine Shop and Elastomer Seal Mfg. Plant 2015 – 2017

- Led improvement of manufacturability and reliability for 18" 10K Annular Blow-out Preventers
- Used React JS to build and implement custom digital training application to manage on-the-job training
- Stepped in as supervisor of 12 employees at BOP manufacturing plant for 6 mo.; created analytics tool in SAP to manage workflows and identify lagging orders; 38% reduction of late deliveries for my team

NOTABLE CODING PROJECTS

UT Self-driving AI Vision System Competition (2020): Placed 1st against my peers. Used pytorch to build a self-driving agent for a racing video game using a fully convolutional network and semantic segmentation

Kaggle Holiday Data Science Competition (2019): Modeled and optimized a complex theoretical problem using a linear programming Min Cost Flow approach; achieved score of 69761.84, within 1.5% of first place

Fantasy Football Predictive Analysis (2017-2020): Using python and sklearn to apply a combo of gradient boosting, SVM, and generalized linear modeling techniques to predict the performance of NFL kickers for applications in fantasy football; outperformed 'expert' choices by 22.7% in 2019 (souce:fantasypros.com)

Full portfolio on next page…

PORTFOLIO CODING PROJECTS

Parallel Programming & Distributed Systems

Analysis of performance of parallelization with prefix scan algorithm – ericpryzant.com/prefix-scan
GPU performance gains with Thrust, CUDA, and CUDA w/ shared memory – ericpryzant.com/kmeans
Improving BST comparison speed with Go parallelization – ericpryzant.com/goBST
Implementing Two-Phase-Commit across networked devices using Rust – ericpryzant.com/rush2pc
Parallelizing N-Body problem using MPI communication over network – ericpryzant.com/mpi-nbody

Web Development

UTsocial.com (2013-2015) – Connected students at UT Austin to on campus events (Enyo JS/Firebase)
SpaceX Workload Reduction Tool (2020) – Internal site, applies ML to Engineer Issue Tickets (jQuery/Flask)
SpaceX BRE Issue Tracking (2020) – Internal site, helps manage workflow, automate tasks (Angular/NodeJS)
utmscs.com (2020) – Provides community for UT MSCS students to review courses (Angular/Firebase)
Schlumberger Training Management Platform (2016) – Internal tool for managing training (ReactJS/NodeJS)
edX++ Chrome Extension (2020) – Adds features to online learning platform edX.org (Javascript)

Mobile Development

UTsocial iOS and Android Mobile Apps (2013-2015) – Companion apps for UTsocial.com (Swift/Java)
MyMovies Android App (2020) – Uses ML to provide movie recommendations for friend groups (Kotlin)

Real-Time Systems

Real time operating system for prototype laser-powered 3D printer (2014-2015) – built with LabView/C++
Real time control system for high-temp/high-pressure prototype test bed (2015) – built with LabView/C++
Real time control system for Schlumberger drilling tools test bed (2015) – built with LabView/C++
Real time control system for Schlumberger high-pressure BOP validation (2016) – built with LabView/C++

Embedded Systems *(all in C++)*

Programmed ESP8266 microcontroller to prototype mesh-networked helmet impact measuring device (2018)
Developed novel self-leveling feature for REPRAP open source 3D printers w/ Arduino-based RTOS (2015)
Built 'Stranger Things' light message display w/ web interface, programmable LEDs; ran on ESP8266 (2017)

Data Science, Machine Learning, and Artificial Intelligence *(all in Python using sklearn or pytorch)*

UT Self-Driving AI Vision System Competition (2020) – ericpryzant.com/visionAI
Fantasy Football Predictive Analysis (2017-2020) – ericpryzant.com/fantasyfootball
Using MinCostFlow to solve million variable optimization problem (2019) – ericpryzant.com/kaggleHoliday
Kaggle Competition – Peking University/Baidu Autonomous Driving (2019) – ericpryzant.com/kaggleBaidu
Kaggle Competition – Lyft Motion Prediction for Autonomous Vehicles (2020) – ericpryzant.com/kaggleLyft
Measuring vision-system performance boosts using novel transformations (2020) – ericpryzant.com/nnBoosts
Building "deepfake" chat bots designed to imitate world leaders (2020) – ericpryzant.com/obamaBot
Maximizing performance of linear networks for vision tasks (2019) – ericpryzant.com/linearBoosting
Achieving competitive play of self-driving agent in Ice Hockey game (2020) – ericpryzant.com/iceHockey
Case Study: Building movie recommendation system w/ mobile applications (2020) – ericpryzant.com/movies
Case Study: Implementing REINFORCE with policy gradients (2020) – ericpryzant.com/reinforce
Case Study: Implementing True Online Sarsa(λ) w/ tile coding (2020) – ericpryzant.com/onlineSarsa
Case Study: Implementing BERT NLP model from scratch (2019) – ericpryzant.com/BERT
Case Study: Applying focal loss to semantic segmentation for self-driving (2019) – ericpryzant.com/focalLoss

Miscellaneous

Building a NES emulator from scratch in C++ (2017) – ericpryzant.com/nesEmulator
Learn Git Internals by Building Git in Python From Scratch (2020) – ericpryzant.com/gitPython

Database Programming

Getting familiar with Scala for big data processing using ride share dataset – ericpryzant.com/scalaBigData
Parallelizing SQL Sorting and Joining from scratch – ericpryzant.com/parallelSQL