Nathan A. Riojas

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Georgia Institute of Technology, 2022
MS, Computer Science
GPA, 4.0

The University of Texas at Austin, 2016
BS, Mechanical Engineering
Minor, Computer Science,
Certificate, Engineering Robotics
GPA, 3.6

Technical Projects

Machine Learning For Trading, OMSCS **(**2021**)** ***Python***

- Implemented decision tree, random tree, and random forest learners to analyze overfitting and performance
- Developed a portfolio optimizer using Numpy and Pandas to manipulate stock data and optimize allocations for maximum Sharpe ratio using the scipy.optimize module

Artificial Intelligence for Robotics, OMSCS **(**2020**)** ***Python***

- Coded localization and mapping software to implement a GraphSLAM algorithm based on given sensor data
- Implemented search algorithms (including A*) to determine the shortest path between points subject to varying movement costs
- Programmed Kalman and Particle filters to localize moving objects with noise and navigate objects accordingly
- Developed and tuned PID controls to smooth an autonomous robot's course

MMAxCalc Mobile Application, Mobile Computing **(**2016**)** ***Java, SQLite***

- Developed both front end and back end of Android app to calculate user punching power utilizing accelerometer data from a wearable device
- Created a database of user profile management for metrics tracking

Visualization Projects Team Lead, Elements of Data Visualization **(**2015**)** ***R, SQL, Tableau, Shiny Package***

- Developed connectors to Oracle database to query data to effectively present data trends
- Researched and built an interactive web app using the Shiny R Framework

Work Experience

03/17–Present **Software Development Engineer in Test, Codeware Inc.**

- Developed testing frameworks using Python and Javascript to mimic testing functionality within Inspect dialogs incompatible with native TestComplete automation suite functions
- Extended functionality of existing automated tests written within in-house TestComplete automation suite to streamline UI testing and calculation verification
- Iteratively collaborated with software developers to implement new software features
- Improved software robustness through bug identification, replication, and root cause analysis
- Verified alignment of software calculations with international ASME design standards

06/16–03/17 **Equipment Engineer, NXP Semiconductors**

- Identified upgrades to perform on robotic equipment to reduce labor required during weekly system shutdown procedures and increase the factory's semiconductor wafer output

02/15–01/16 **Research Engineer, Biomechanics Experimental Laboratory**

- Designed biaxial testing system to analyze heart tissue to aid in surgical repair of the mitral valve
- Minimized redesign changes to incorporate load cells and actuators using SolidWorks

05/15–10/15 **Research Engineer, REWIRE Laboratory**

- Fabricated a low-cost gait rehabilitation robot prototype by using a 12-bar linkage mechanism which could be implemented at 10% of the cost of modern gait training robots
- Modeled the robot based on motor input and robot output velocities through differentiation of the motion path of linkages using Matlab

Languages / Tools

Python (Numpy, Pandas, SciPy), Matlab, Javascript, Java, SQL, SQLite, R (Shiny), HTML/CSS/Bootstrap, TestComplete, Jupyter, Pycharm, Miniconda, Android Studio

Publications

Duenner, A., Yao, T., De Hoyos, B., Gonzales, M., Riojas, N., and Cullinan, M. (October 10, 2016). "A Low-Cost, Automated Wafer Loading System With Submicron Alignment Accuracy for Nanomanufacturing and Nanometrology Applications." ASME. *J. Micro Nano-Manuf.* December 2016; 4(4): 041006