Nathan A. Riojas

me@nathanriojas.com | 972-800-0994

Georgia Institute of Technology, 2023
MS, Computer Science

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

Technical Projects

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

- Coded localization and mapping software to implement a GraphSLAM algorithm based on given sensor data
- Implemented search algorithms (including A*) in Python 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**)**

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

Visualization Projects Team Lead, Elements of Data Visualization **(**2015**)**

- Developed connectors to Oracle database to query data presented in Tableau and R Studio to effectively present data trends
- Researched and built an interactive web app using the Shiny R package to host and style web apps

Passive Prosthetic Finger Mechanism, Robot Mechanism Design **(**2015**)**

- Programmed and simulated the motion path for a dual four bar linkage prosthetic finger in Matlab
- Integrated a servo to move the fabricated prototype and coded a simple Arduino open loop control for demonstration

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Work Experience

03/17–Present **Quality Assurance Engineer, Codeware Inc.**

- 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
- Developed new testing frameworks using Javascript to mimic testing functionality within Inspect dialogs incompatible with native TestComplete automation suite functions
- Improved existing automated tests written within in-house TestComplete automation suite to streamline software calculation verification

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 Assistant, 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 Assistant, 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

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Languages: Python, Matlab, Javascript, Java, XML, SQL, SQLite, Bootstrap, CSS

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

3400 Harmon Ave, Apt 421, Austin, TX, 78705