

# 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, 3.55

## Technical Projects

### **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 to present data for final presentation

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

- Programmed and simulated the motion path for a prosthetic finger with a dual four bar linkage design
- 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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## Publications

Duennen, 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