Juan Suquilanda

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EDUCATION

Virginia Tech | Blacksburg, VA **Expected Graduation Date**: **May 2023**

Bachelor of Science in Electrical Engineering

Focus: Robotics, Controls, & Autonomy **Secondary:** RF & Microwave

Relevant Courses: Principles of Robotics, Data Structures & Algorithms, AI & Engineering Applications, Digital Systems, AC Circuit Analysis, Embedded System, Electromagnetic Fields I & II

Universidad de Granada | Granada, Spain **July 2017**

Study Abroad - Spanish Language & Culture Program

SKILL SET

Robot Operating System (ROS), XML, RVIZ, Gazebo, Linux, Python, X-Midas, C/C++, MATLAB, JIRA, Git
Platforms: Visual Studio Code, Gitlab, Github, LTSpice, Waveforms, Advanced Design Systems
Technical Skills: Robotic Simulation, Circuit analysis, Circuit design,
Other: Bilingual (English & Spanish Native), AWS Accreditation

PROFESSIONAL EXPERIENCE

Hume Center of National Security & Technology | *Blacksburg ,VA* | *Research Fellow* **Sept. 2021 - Dec. 2022**

- Implemented **radar** using a Linear Modulated Signal and **matched filtering** in GNU radio and **MATLAB**
- Used a 4 Aconneer radar chip configuration to calculate object's position in **C** and map object within range on an xyz coordinate system in **python** and presented at Virginia Tech National Security Colloquium
- Processed **LORA** transmission received on **Software Defined Radio** in MATLAB using matched filtering to decode which frequency applies to intended symbol payload

CACI | *Sterling, VA* | *Digital Signal Processing Intern* **May - Aug 2022**

- Developed API contribution that **optimizes** data transfer from one microservice to another using **ActiveMQ** messaging service, reducing frequency switch time by **~99%** in **python** maintained on **Gitlab**
- Developed in linux environment using X-Midas, power spectrum density plots, python, C++ & VM's

PROJECTS

IEEE SoutheastCon 2023 Hardware Competition | *Orlando, FL | ROS Lead* **Sept. 2022 - Present**

- Taught myself **Robot Operating System** (ROS) and leading a team of 7 to learn it as well in order to implement a fully autonomous robot equipped with an **Intel RealSense d435i** & **NVIDIA Jetson Nano**
- Designed a custom **URDF** file to efficiently test algorithms in **Gazebo** & **RVIZ** to study robot's performance
- Developed algorithm to align & and home in on desired objects using computer vision & AI techniques
- Successfully integrated all of the robot's micro services with a **ROS** based messaging system, allowing the robot to complete autonomous tasks and earn a competitive amount of points at competition

- **PACMAN AI |** *Blacksburg, VA* **Aug. 2022 - Dec. 2022**

- Implemented an AI system for Pacman using various techniques such as Q-Learning, Breadth-First Search, Depth-First Search, Markov Chains, Q-learning, and Multi-Agent Systems
- Developed algorithms to generate optimal paths and make decisions based on game state and reward functions

Analog Circuit Design | *Blacksburg, VA* **Aug. 2022 - Dec. 2022**

- Hands-on experience designing and building a 5 Band Constant Q Analog Audio Equalizer, Control Amplifier, & Proportional-Integral-Derivative (PID) controller
- Incorporated root locus, Nyquist, and Bode plots in LTSpice and matlab to stabilize systems