Abraham Garcia

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Education

University of Nevada, Las Vegas — December 2024
Bachelor of Science in Computer Engineering — GPA: 3.43

Technical Skills

C/C++, Python, RISC-V Assembly, SystemVerilog, Quartus II, ModelSim, Visual Studio, Linux, Bash, Windows, Powershell, Analog Circuits, Arduino, KiCad, Virtuoso Cadence, Logic, LTSpice, ROS, Microchip Studio, MARs, R code, AWS Cloud, Arduino IDE, TinkerCAD, MQTT, AWS

Projects

HoloTouch — Jan. 2024 - Dec. 2024

- Led team efforts in brainstorming, decision-making, project planning, research, and timeline management to ensure successful execution.
- Implemented a Jetson Nano-based system with YOLOv5 for real-time hand gesture detection, allowing mouse control on a computer with output displayed on a hologram.
- Configured the Jetson Nano to host YOLOv5 code by setting up a Python virtual environment, installing required dependencies, and deploying the model for hand gesture recognition.

Mobile Robot — Aug. 2024 - Dec. 2024

- Co-developed a 3-layer autonomous rover integrating LIDAR, Jetson Nano, and ROS controller, achieving 100% functionality across mapping, localization, and navigation tasks.
- Designed and tested the rover in both Rviz/Gazebo simulations and real-world environments, executing over 20 ROS commands to ensure seamless teleoperation and obstacle avoidance.
- Successfully created and utilized custom URDF models, enabling precise navigation with collision avoidance, resulting in accurate mapping of a 20x20 ft room.

FPGA-Based Digital Lock System with Digital Noise Filter — Aug. 2023 - Dec. 2023

- Utilized the Mealy Finite State Machine for real-time password validation based on input frequency, as it allowed immediate output response to changes in input.
- Developed structural SystemVerilog code to integrate the digital noise filter and VGA controller for visual feedback.
- Programmed the system to display "Password Locked Try Again" on the VGA monitor and blink 4 LEDs on incorrect input, while a successful attempt illuminated another set of LEDs and displayed "Password Unlocked" on the monitor.

Ambiance Monitoring and Music Recommendation System — Aug. 2024 - Dec. 2024

- Developed an IoT system integrating Arduino MKR1000 nodes, TMP36 temperature and HPP801A031 humidity sensors, and ThingSpeak cloud services to analyze real-time weather data.
- Designed and implemented an MQTT-based communication network, processing over 50 data points and triggering Spotify playlists via MATLAB Analysis and IFTTT Webhooks.

Honors and Activities

- **Theta Tau - Theta Zeta**: Scribe — Aug. 2022 – June 2024
- **Languages:** English (native), Spanish (native)