Gilberto Gonzalez Jr.

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SUMMARY

Robotics engineer with strong technical experience and innovative aptitude. Hands-on experience in rapid-prototype development, robotic system design, autonomous navigation, machine learning, and computer vision. Agile learner and able to formulate creative solutions to complex tasks.

EDUCATION

Florida International University
Bachelor of Science in Mechanical Engineering

- Concentration: Robotics and AI
- GPA: 3.6/4.0
- Robotics Club Board Member, VEXU Team Member

SKILLS

- Hardware: Jetson Nano, Raspberry Pi, Arduino, Ender 3D Printer, Intel RealSense Depth Camera, LiDAR, GPS
- Software: Linux Ubuntu, Robot Operating System (ROS/ROS2), Solidworks, Jira
- Programming languages: C, C++, Python, MATLAB
- Tools: Git, NumPy, PyTorch, TensorFlow, PyBullet, Gazebo, Open AI Gym, OpenCV, YOLO, Docker
- Hands-on experience with robotic arms and autonomous mobile robots
- Robotic software, mechanical, and electrical troubleshooting skills

EXPERIENCE

Robotics Researcher, Mobile Robotics *(Jan 2022 – Present)*
Florida International University: Applied Robotics Laboratory

- Successfully set up and fully configured a Boston Dynamics 'Spot' quadruped robot, integrated LiDAR and Infrared Camera in ROS to enhance Spot's capabilities.
- Implementing reinforcement learning for safe navigation of the Spot robot in low gravity environments (e.g., Mars, the moon) using ROS and Gazebo Simulations.

Robotics Researcher, Computer Vision and Autonomous Vehicles *(Aug 2022 – Dec 2022)*
Florida International University: Mechatronics Laboratory

- Led the software development for an autonomous vehicle capable of detecting potholes and seamlessly laying asphalt.
- Developed advanced object avoidance algorithms, leveraging depth camera sensor technology in ROS to enable seamless autonomous navigation in real-world scenarios.
- Achieved >97% accuracy rate of pothole detection by implementing deep learning computer vision model with customized and manually labeled data.

Mechanical Engineer Intern *(Feb 2022 – Dec 2022)*
Silver Wings Aerospace

- Demonstrated expertise in CAD design and material selection by designing specific aircraft parts using Solidworks, resulting in a significant cost savings of over $20,000 on repairs.
- Assumed responsibility for ensuring safe and reliable avionics systems through meticulous testing and troubleshooting, determining their airworthiness for installation on aircraft.

PROJECTS

6DoF Robot Arm with Computer Vision

- Designed and developed software for a fully 3D printed 6DoF robot arm using Arduino and Raspberry Pi.
- Implemented deep learning computer vision and inverse kinematic algorithms for 'smart' tasks.

Autonomous Landmine Detection Robot (In-Progress)

- Developed GPS-based navigation in ROS that enables the robot to navigate in complex terrains and avoid obstacles
- Built landmine detection system using metal detection & deep learning computer vision with 95% accuracy rate.