Gilberto Gonzalez

(305) 799-5800 | gilbertgnzz@gmail.com | San Francisco Bay Area | Website: www.giltech.xyz

SUMMARY

Robotics Software Engineer with hands-on experience in aerial robotics, computational perception, embedded systems, and rapid-prototype development. Agile learner and able to formulate creative solutions to complex tasks. Visit my website for personal projects!

SKILLS

- **Software**: Linux, ROS/ROS2, Docker
- **Languages**: C, C++, Python, JavaScript, HTML/CSS
- **Libraries**: OpenCV, NumPy, PyTorch, CUDA, SciPy
- **Tools**: Git, Jira, Confluence, Jenkins (CI/CD)
- **Experience**: Aerial robotics, computer vision, embedded systems, computer networking

EXPERIENCE

Autonomy Software Engineer *(June 2023 – Present)*
Supernal - San Francisco Bay Area

- Developed a real-time birds-eye-view (BEV) image projection algorithm utilizing multiple fisheye cameras and integrated human detection which improved situational awareness in pre-takeoff/post-landing scenarios.
- Developed Visual SLAM algorithms by employing Structure from Motion (SfM) and Direct Linear Transformation (DLT) for estimation, and Iterative Linear Least Squares (LLS) for optimization. Successfully deployed on an aerial robotic test platform for SLAM and autonomous navigation.
- Built a full-stack web interface for efficient data collection on aerial test vehicles. Enabled sensor checks, real-time camera streaming, and optimized data capture efficiency.
- Utilized GPU programming (CUDA) to accelerate training of machine learning computer vision models and enhance image processing algorithm speeds for numerous applications.
- Wrote and maintained software tools, core libraries, and sensor interfaces in containerized environments.

Robotics Researcher *(May 2022 – May 2023)*
FIU Applied Robotics Laboratory - Miami, FL

- Built low-level ROS2 interfaces for diverse sensors that use various communication protocols (serial, LAN, I2C, USB, etc.) to enhance Boston Dynamic's Spot's capabilities and support seamless sensor integration/data transmission.
- Implemented reinforcement learning methods for autonomous navigation for Spot in low gravity environments via simulation.
- Developed path planning algorithms to enable seamless autonomous navigation for a pothole-detecting-and-filling robot.
- Implemented deep learning models (YOLO & Mask-R-CNN) and developed point cloud processing algorithms in C++ to compute pothole circumference and volume from RGB-D camera data.

Avionics Technician *(Feb 2022 – Dec 2022)*
Silver Wings Aerospace - Miami, FL

- Developed automated scripts for extensive data logging and analysis in avionics system tests, ensuring the integrity and airworthiness of repaired avionics systems.
- Designed specific tools to assist in avionics system repairs using CAD software and 3D printing.

EDUCATION

Georgia Institute of Technology
Master's degree, Computer Science

- Concentration: Computational Perception and Robotics - GPA: 4.00/4.00

Florida International University (FIU)
Bachelor's degree, Mechanical Engineering

- Concentration: Robotics and AI - GPA: 3.62/4.00