

Santiago Restrepo

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WORK EXPERIENCE

Abyss Solutions

Houston, TX

Field Operations Engineer

Oct 2024 - Present

- Run and supervise data capture operations on Oil & Gas facilities using LiDAR and Computer Vision technologies, using sensors such as Leica RTC360, DJI Zenmuse Camera, in-house equipment, and high-end camera systems.
- Carry out project planning and scoping to accurately estimate field work days using confidential drawings, site visits, and interview sessions to clarify assumptions.
- Build photogrammetry experiments using high-quality digital images to test and enhance current AI-powered defect detection using Metashape and Reality Capture.
- Deliver software applications to assist in immediate client requirements using Python and open-source tools on a Linux environment.
- Document standard procedures, best practices, and experiments using Confluence.
- Build and maintain in-house and third-party robotic systems such as Unmanned Surface Vessel, ROV, and subsea cameras running ROS.

Kiwibot

Boston, MA

Maintenance Engineer Junior

Aug 2022 - Dec 2022

- Maintained and repaired a fleet of 15 delivery robots, achieving an uptime rate of 90% to ensure timely deliveries of over 400 monthly orders in a bilingual location.
- Performed regular diagnostics and preventative maintenance on all robots, reducing repair costs by 20% through effective component salvage and recycling practices using electrical and electronic instruments.
- Followed PCB schematics using Altium 365 software to intervene electronic components and mechanical drawings to disassemble the hardware as needed.

Universidad Autonoma de Occidente

Cali, Colombia

Undergraduate Research Assistant

Jul 2019 - Jul 2022

- Built a netted flying space for the robotics laboratory using ultra-wideband sensors for the positioning of aerial robots with a mean squared error of 0.2 meters.
- Managed an inventory of 150 items containing aerial robots and spare parts using Microsoft Office software.
- Showcased the 13 projects of the robotics laboratory in presentations, conferences, schools and within the student community, reaching an average audience of 100 people per semester.
- Carried out literature reviews on perception and planning for autonomous robots using Scopus and Google Scholar.

EDUCATION

Universidad Autonoma de Occidente

Cali, Colombia

Mechatronics Engineering BS - ABET Certification - GPA:3.75 - Excellence Scholarship

Graduation Date: Dec 2022

PROJECT EXPERIENCE

Universidad Autonoma de Occidente

Cali, Colombia

CrazyKhoreia: A robotic perception system for MAV

Jan 2022 - Jul 2022

- Automated the creation of aerial light shows by utilizing computer vision and machine learning algorithms, using Python libraries such as OpenCV, SciPy, Sci-kit Learn, and NumPy, reducing operational time by 80%.
- Implemented an image-based motion planner for aerial robots using Python and the ROS2 middleware with an RMSE value of 0.45 and 0.13 meters in single-drone and swarm modes respectively.
- Used Git and PiPy for source control and packaging of the Python project, facilitating its multi-platform usage in Linux, Windows and Google Colab.
- Prepared a manuscript using LaTeX (Overleaf) and published it to [SN Computer Science](#).

Universidad Autonoma de Occidente

Cali, Colombia

3DBot. A large format robotic mobile 3D printer.

Jul 2021 - Jul 2022

- Led the development of a robotic mobile 3D printer from conceptual design to final prototype, collaborating with two research groups and contributing to a capstone project.
- Designed the control architecture using Python, C++ and ROS on a Raspberry Pi board, managing communication protocols between high-level and low-level software and hardware layers.
- Established a simulation pipeline in Gazebo to test and validate the robot's kinematics and control parameters.

SKILLS & INTERESTS

Skills: Python (OpenCV, SciPy, Sci-kit Learn, Numpy), C++, ROS2, Git, PiPy, TensorFlow Certificate, PyTorch.

Interests: Automation, Robotics, Machine Learning