DEVAGYA BUDHIRAJA

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SUMMARY

Proactive **Mechatronics Engineering student** at the **University of Sydney** with a strong passion for **robotics, AI-driven automation, and embedded systems**. Experienced in **PCB design, sensor integration, hardware prototyping, and embedded microcontrollers**, with hands-on work in **ROS2, C, C++, Python, and ARM Assembly**. Actively involved in **STEM** initiatives, **robotics competitions**, and engineering projects, demonstrating strong problem-solving and innovation skills. Eager to contribute to cutting-edge advancements in **robotics, AI, and autonomous systems**.

TECHNICAL SKILLS

CAD & Design: Autodesk Fusion 360, SolidWorks, Blender

PCB Design & Prototyping: EasyEDA, Arduino, Teensy, STM32, ESP32, soldering, sensor integration

Programming: Python, C, C++, ROS2, SQL, ARM Assembly

Hardware & Fabrication: 3D printing, embedded systems, robotics, electronics

PROFESSIONAL EXPERIENCE & PROJECTS

Electrical Engineer at Sydney Interplanetary Rover Initiative — Sydney, Australia
June 2024 - Present

- Developing a **Sensing HAT PCB** using **EasyEDA** to log **10+ sensor data streams** on a half-scale rover.
- Researching, selecting, and testing **IP cameras** for real-time vision processing with the rover.
- Calibrated sensors with **C++ and ROS2** on **Jetson AGX Orin** & **Teensy 4.1**, **improving accuracy by 25%**.

Ground Control Engineer at The Rocketry Team — Sydney, Australia
February 2023 - June 2024

- Designed and tested a **high-reliability igniter circuit** using **EasyEDA**, reducing **ignition response time by 20%**.
- Assembled and soldered **12+ sensor modules** for **Pardalote** hybrid rocket, improving telemetry data accuracy.
- Created and assembled a **camera module** with a **Wi-Fi module** for remote recording.

Subcommittee at Sydney University Society of Medical Innovation — Sydney, Australia
August 2023 - August 2024

- Managed **photography & newsletters** for **Startups101** & **Medivate Hackathon**, **boosting engagement by 20%**.

Autonomous Inventory Tracking Robot with ROS2 — Sydney, Australia
September 2024 - October 2024

- Built a **ROS2-based inventory tracker** with TurtleBot3, **achieving 95% accuracy**.
- Designed a **C++ based AprilTag detection system**, with **efficiency of 95%**, and **integrated SLAM** for live mapping.
- Created a user-friendly **GUI for live monitoring**, and **inventory tracking**, improving warehouse monitoring speed by **2x**.

ROS2-Based Autonomous Navigation for Maze Solving — Sydney, Australia
August 2024 - September 2024

- Developed a **wall-following algorithm** using **ROS2 and TurtleBot3, achieving 90% success** in **3 mazes**.
- **Tested in Gazebo** with **3 different environments**, **optimising path planning by 25%**.

PCB Quality Control System — Sydney, Australia
September 2023 - October 2023

- Developed a system that **analyses circuit layouts** using **algorithms in C** to determine circuit connections.
- Implemented a **graph-based algorithm**, optimising defect detection **runtime by 20%**.

Space Settlement Design Competition — Online, Discord
January 2021

- Runner-up **(Top 2/50 teams)** in the **Asian Regional Space Competition**.
- Designed using **Autodesk Fusion 360, robotic prototypes** for **space construction applications**.

EDUCATION & OTHER

UNIVERSITY OF SYDNEY — February 2023 – Present
Bachelor of Engineering Honours (Mechatronic Engineering)
LANGUAGES: Proficient in English and Hindi.
INTERESTS: Robotics, Embedded Systems, Formula 1.