ADESH GREWAL

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Professional Summary

Robotics Engineer with experience in control systems specializing in mobile robots. Demonstrated ability in robotics design and algorithm development with proficiency in CAD,MATLAB, ROS,Python, and C++.

Portfolio: https://ag-013.github.io/

Experience

MECHATRONICS TUTOR **July 2025 - Present**
University of Sydney, Sydney

- Facilitated 3 weekly lab sessions, enhanced practical mechatronics skills.
- Tutored 120 engineering students, deepening circuit design understanding.

MECHANICAL & MECHATRONICS SYSTEMS LEAD **July 2018 - January 2025**
UTS Autonomous Motorsports, Sydney

- Led 8-member team for autonomous car with sub-3s system latency.
- Designed dual-mode pedal box and Ackerman steering system designed to enable transition between 2 states. Collaborated with electrical/software teams for full autonomous stack integration.
- Led system design and requirement analysis for 3 go-karts chassis over 2 years.
- Managed integration of mechanical and electrical systems of all 3 go karts.
- Competed nationally, achieving recognition in 2 competitions for on track performance

ENGINEERING RESEARCHER - ACOUSTIC/VIBRATIONAL **October 2023 - November 2024**
UTS Tech Labs, Botany Bay

- Conducted material damping analysis on 3 types of different flowers.Utilized Siemens Sim Centre for mode shape analysis and structural assessment.
- Evaluated 15+ acoustic insulation materials mixes, determining noise reduction performance different material combinations.

GRADUATE TRAINEE - SHOT BLASTING OPTIMISATION **July 2022 - September 2022**
Mahindra & Mahindra, Swaraj, Chandigarh

- Improved production line efficiency by conducting consumable cost analysis for shot-blasting operations, ensuring accurate 80% resource allocation.
- Managed PLC, SCADA, and automation systems, ensuring operational consistency and reliability.

ENGINEERING RESEARCH INTERN - EMBEDDED SENSORS **June 2021 - February 2022**
NTU @ Panjab University, Chandigarh

- Published Springer Journal (RF-Based 3D-Printed Sensors) https://link.springer.com/article/10.1007/s12046-022-01992-2.
- Designed 3D-printed RF sensors fabricating from recycled ABS plastic and PVDF filament for cell condition monitoring, and analyzed dielectric property variations and determine impact on antenna gain via two test samples.

Education

MASTER OF PROFESSIONAL ENGINEERING **August 2023 - July 2025**
University of Technology Sydney

- Graduate Project: Robotic Arm-Equipped Guide Dog for the Visually Impaired.
- Key Study Areas: Robot Exploration & Navigation, Autonomous Control, Real-Time Simulations.

BACHELOR OF MECHANICAL ENGINEERING **August 2018 - July 2022**
Panjab University

- Graduate Project: Autonomous Fixed Wing UAV for Surveillance.

Skills

- C++, Python, MATLAB, ROS/ROS2, CAD, Rapid Prototyping
- Algorithm Development, Control Systems, Image Detection
- Robotics Design , System Design

Projects

- Developed a 3-DOF robotic arm integrated with Boston Dynamics Spot for guidance for visually impaired in collaboration with Guide Dogs Australia
- Autonomous navigation in unstructured area using frontier exploration and yolo for object identification
- Multi robot collaboration and land surveying via ROS2 control stacks for quadcopter, Ackermann-steer, and skid-steer robots
- Vision based manipulation of robot arm to achieve image-guided pick-and-place using depth camera, OpenCV, and eye-to-hand calibration
- Autonomous Fixed wind drone for surveying

References

Dr. Donald Dansereau, University of Sydney
Dr. Marc Carmichael, UTS - Robotics Institute
Dr. Can Nerse, UTS Tech Labs