MOHAMED NALIM

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ACADEMIC CREDENTIALS

NUST (National University of Sciences and Technology) - CEME   *Islamabad, Pakistan*
BEng. Mechatronics Engineering - *(Merit Scholar, Allama Iqbal Scholarship, HEC - 100%)*   *Nov 2021 – May 2025*

PROFESSIONAL EXPERIENCE

CNSA, China | SQU, Oman | NUST, Pakistan | Lunar Vision, Japan   *Remote*
Mechanical Team Lead, Research intern   *Jun 2024 - Sep 2024*

- Led a team of 2 engineers in designing the complete mechanical system for the FLI-ME (Flying Imagers for Moon Exploration) payload, ensuring it fit within a compact 300x300x150 mm enclosure in its rest position.
- Devised a spring-loaded ejection mechanism with a rack & pinion system, spring motor, and one-way clutch bearing, along with a dual-axis (±70°) azimuth & elevation control system for precise targeting (upto 100m) and stabilization.
- Conducted trajectory analysis and impact dynamics optimization for successful deployment, imaging, & data transmission, and co-authored a peer-reviewed research paper (*IAC-24,A3,IP,212,x83782*) at 75th IAC in Milan, Italy on this project.

PhotoMath   *Remote*
Freelance Math Expert Solver | Reviewer   *Aug 2022 - Jan 2024*

- Solved advanced mathematics problems (Algebra, Trigonometry, Geometry, Probability, Statistics) with 80%+ accuracy.
- Reviewed and graded solutions with 75% accuracy, ensuring high-quality responses.

RIN AutoMart (PVT) LTD   *Kandy, Sri Lanka*
Intern   *Jul 2023 - Sep 2023*

Hands-on experience in machine handling (welding, drilling), automobile maintenance (brake system), & workshop management.

National Centre of Robotics & Automation-RML   *Islamabad, Pakistan*
Intern   *Jul 2022 - Sep 2022*

Drafted 3D models in SolidWorks, operated CNC, laser cutting, & lathe machines, and build PCBs from design to fabrication.

PROJECTS & INNOVATIONS

Modular Self-Reconfigurable Robot (MSRR)   *Sep 2024 - Present*

- Designed a 300-400g, 5-inch self-reconfigurable robot with ESP32, IMU, and ESP32-CAM for autonomous systems for multi-tasking.
- Integrated N42 neodymium magnets for robot kinematics and motion planning, enabling seamless reconfiguration.
- Optimized for automation, disaster response, space exploration and assistive robotics, leveraging sensor fusion and SLAM (Simultaneous Localization and Mapping) to enhance versatility.
- Achieved a 30-50% reduction in operational costs and a 50% weight reduction, improving efficiency and scalability.

Human Replicating Mechanical Arm   *Dec 2024– Jan 2025*

Fabricated a wood & metal mechanical arm replicating human movements, modeled in SolidWorks, analyzed in ANSYS for structural integrity, and tested in ROS2 and Gazebo.

4-Armed Pick & Place Robot   *Sep 2023 – Aug 2024*

- Designed a 10"x10" 4-DOF autonomous robot, 3D-printed with PLA, using high-torque encoder motors and a custom H-bridge to lift 4 objects with PID control, improving efficiency by 40%.
- Integrated IR, ultrasonic sensors, and the Grassfire algorithm for autonomous navigation.

SKILLS & PROFICIENCY

Robotics & Controls: *Intermediate* - CoppeliaSim, LabView, Linux | *Beginner* - ROS2, Gazebo
CAD & Design: *Expert* - SolidWorks | *Advanced* - AutoCAD, PCB Design | *Intermediate* - Altium Designer
Simulation and Analysis: *Advanced* - Proteus | *Intermediate* – CNC simulator, Ansys, FEA
Programming: *Advanced* - C++, Python, C | *Intermediate* - Assembly, DS & OOP, MATLAB | *Beginner* - Verilog
Software & Development: *Intermediate* – Arduino IDE, VS Code, ModelSim, Keil, Git | *Beginner* - Machine Learning
General Productivity and Editing: *Advanced* - MS Office, Editing
Soft Skills: Project Management, Leadership, Communication, Innovative, Analytical
Languages: *Native* - Tamil | *Advanced* - English | *Intermediate* – Urdu, Sinhala

CERTIFICATIONS & TRAININGS

Hackathon - CEME '23: Best Product Design – "Wearable Smart Sensing Insole"   *30 Dec 2023*
Altium Education: Course completion – "PCB Design & Manufacture"   *Oct 2022*
University of Morattuwa, Sri Lanka: Course completion – "Python for Beginners"   *Aug 2022*

EXTRA-CURRICULARS

SolidWorks User Group – Islamabad: Worked in logo creation & Member of graphics team   *Apr 2023 - Present*
Robotics and Automation Club (RAC): Member of UGV Team (Project: Automatic vacuum cleaner)   *Jul 2022 - Present*
Muneer Youngsters Club: Kasawatta Village Welfare Association   *Jan 2020 - Present*