NISHANT RANA

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SUMMARY

Robotics Engineer with handson experience in designing, simulating, and deploying robotic systems. Skilled in autonomous navigation, robotic manipulation, and industrial automation, with a strong ability to translate theory into practical solutions.

EDUCATION

Bachelor of Technology in Robotics and Automation 2022 - Present
The Neotia University, West Bengal **CGPA: 9.04 (till 6th semester)**

Higher Secondary (ISC) 2022
Don Bosco School, Kolkata **Percentage: 89%**

SKILLS

Programming Python, C, C++, Java, ASP.Net
Machine Learning Scikit-learn, PyTorch, TensorFlow
Robotics Platforms Arduino, ESP32, Raspberry Pi, Kinnova Gen3 Lite, xArm 850, 3D Printing
Simulation/Tools ROS2, OpenCV, Ansys, MATLAB, Gazebo, CoppeliaSim, SolidWorks, IsaacSim

CONFERENCE

N. Rana, P. K. Jha. (2024). *Enhancing Serpentine Motion and Obstacle Avoidance in Snake Robot Locomotion: Design, Simulation, and Analysis*. Presented at TLASH 2024.

PROFESSIONAL EXPERIENCE

Visiting Student, ELIXIR Lab, Toronto Metropolitan University Remote

- Designed custom Markov Decision Process policies for xArm 850 robotic arm with dexterous hand.
- Obtained 95% simulation task success rate, validated remotely on a physical robot.
- Trained and tested LEAP Hand for grasping with tactile feedback integration.

R&D Project Lead, Nishant Infosys Feb 2025 - July 2025

- Engineered a complete IoT attendance system, from component-level circuit design to the final product prototype.
- Architected a custom hierarchical communication protocol for 40 nodes in a Wi-Fi-denied environment.
- Delivered 0% packet loss while handling 100 scans per minute.3

Product Development Intern, Expat Meal, Denmark Dec 2024 – May 2025

- Engineered an automated rice dispenser with ±2 g precision and 70 °C heat retention.
- Integrated an automated conveyor system for continuous dispensing cycles.
- Led end-to-end process including CAD design, simulation, hardware integration, and system testing.

Research Intern, NIT Meghalaya June 2024 - Aug 2024

- Simulated a flapping-wing aerial robot with electroactive polymers.
- Performed aerodynamic optimization in Ansys Fluent for thrust and lift.
- Applied Bergström-Boyce and Gent models to study hyperelastic behaviour of dielectric elastomers.

PROJECTS

Autonomous Drone Stabilization & Navigation(Gazebo) Sep 2024 - Nov 2024

- Tuned PID controller and maintained drone stability within an error margin of ± 0.4.
- Implemented A* and RRT algorithms for efficient collision-free path planning.
- Enabled Aruco marker detection for real-time navigation.

Amphibious Agricultural Robot Feb 2024 - May 2024

- Designed an amphibious robot with a 4-DoF manipulator for agricultural automation.
- Secured 3rd place at IEEE R10 Robotics Competition.

Staircase Climbing Defence Robot Jul 2023 - Sep 2023

- Developed a stair-climbing mechanism using UDL-based wheels.
- Deployed a ping-pong ball shooting system with dual 2-DoF for improved aiming.
- Built the circuitry for remote control and receiver operation.

LEADERSHIP

Operational Head Present
Techniche (Official Tech Club) *The Neotia University*

- Organized and hosted technical quizzes, events, and workshops with 250+ student participation.
- Managed club operations and coordinated teams to ensure smooth execution of activities.

Chief Technical Manager 2025
TRONIX 2k25 - Inter College Robotics Competition *The Neotia University*

- Led technical operations and managed a 20-person team.
- Designed event arenas including Robo Race, Line Follower, and Aquatronics.

WORKSHOPS & CERTIFICATIONS

ROS2 Workshop, STEM World 2025

- Gained hands-on experience with ROS2 fundamentals including nodes, topics, and services.
- Implemented control of a robotic arm using ROS2 for motion execution.

Drone Development Workshop, Inspecto3D 2024

- Completed 30-hour hands-on training session on drone operation, focusing on manual control, flight dynamics, and safety protocols.
- Gained practical experience in take-off, landing, maneuvering, and troubleshooting flight issues.

3-Day Workshop on PLC, PISPL 2023

- Learned SCADA integration and Variable Frequency Drive (VFD) control.
- Programmed industrial automation tasks using PLC ladder logic.

AWARDS & ACHIEVEMENTS

Awarded 50% Tuition Fee Waiver Scholarship for academic excellence at The Neotia University.

Winner at Parikalpana'24 Project Exhibition, The Neotia University.

Won 2nd place in Code-o-Soccer at IIT Kharagpur.

Won 3rd place in Droid Blitz Robotics Competition at IIT Kharagpur.