

Jyothish Kumar J

M.Sc.(Chemistry, Computer Sciences)

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I am a full-stack robotic systems designer with experience in UAVs, wearable healthcare IoT devices, and sensor-fusion-based perception for autonomous vehicles. I hold an M.Sc. in Chemistry with a minor in Computer Science from the National Institute of Science Education and Research (NISER), Bhubaneswar (An OCC of HBNI). My fields of interest include embedded systems, computer vision, robotic prosthetics, soft robotics, smart materials, mobile robotics, SLAM, IoT, automation, and instrumentation development for lab and biomedical applications.



Publications & Patents

1. **Jyothish, K.J.**, Keshri, S., Vishwakarma, A. et al. Multimodal two-wheeler driving dataset for autonomous driving applications. *Discov. Robot.* 1, 13 (2025). <https://doi.org/10.1007/s44430-025-00013-1>
2. **Kumar J. Jyothish** and Subhankar Mishra. (2024). A survey on Robotic Prosthetics: Neuroprosthetics, Soft Actuators and Control Strategies. *ACM Comput. Surv.* <https://doi.org/10.1145/3648355>
3. **Jyothish, K. J.**, Mishra, S., Shivangi, S., Bibhu, A., Saha, S. (2024). MIMA 2.0 - Compact and portable Multifunctional IoT integrated Menstrual Aid. In *Internet of Things* (p. 101075). Elsevier BV. <https://doi.org/10.1016/j.iot.2024.101075>
4. A. Bibhu, S. Shivangi, S. Saha, **J. K. J** and S. Mishra, "MIMA - Multifunctional IoT integrated Menstrual Aid," 2022 IEEE International Conference on Omni-layer Intelligent Systems (COINS), 2022, pp. 1-5, DOI: 10.1109/COINS54846.2022.9854943.

[Patents]

1. (IN HEARING) **Jyothish, K.J.**, Shivangi, S., Bibhu, A., Mishra, S., & Saha, S. (2025). Multifunctional IoT-based menstrual aid for menstrual health and comfort (Indian Patent Application No. 202531001119). Indian Patent Office.
2. (APPLIED FOR) **Jyothish, K.J.**, & Panda, S. (2026). System for Non-Contact Railway Gauge Measurement. (Indian Patent Application No. 202631090427). Indian Patent Office.



Projects

- "Autonomous Railway Track Inspection System", at AI and HPC Research Centre [AHRC], IIT Bhubaneswar. This project is aimed at developing a self-propelled robotic railway infrastructure inspection system. I led this project from its inception and worked on electronics, ROS2 software stack and data collection and processing pipeline.
- ADAS research - "Swayansaasita" at the School of Computer Sciences, NISER. This project is aimed at research and development in autonomous vehicles and ADAS systems for two-wheeled vehicles. My roles in this phase include **system design**, development of a sensor data collection pipeline, and data processing.
- I have led several **embedded systems** projects in my role as a systems engineer at UAVIO Labs, including designing and developing an expansion board for ModalAI Voxl2 SOC, a Custom carrier board for Cube Autopilot FCUs, etc.
- Design and development of a novel **Multifunctional IoT Integrated Menstrual Aid [202531001119]** for relief from menstrual cramps, leakage, rashes, and malodor experienced by women.
- MSc. dissertation: Developed a PVDF-HPF and polyaniline-based **Ionic Electroactive Polymer Actuator** along with an LSTM-based control system using EMG sensor data in real time.
- Apart from these, during my time with RoboTech Club of NISER, I have led the development of several projects. A brief account of those projects can be found at <https://jyozspace.in/projects>.



Technical Skills

- **Programming:** C++, Python, ROS2, Flutter, MAVLINK Protocol, Processing 3.0.
- **Development Boards:** Arduino, Raspberry Pi, Nvidia Jetson Nano, Custom boards based on ATmega328, STM32F4, ESP32, ATTiny, ModalAI VOXL (Qualcomm RB5-based) SOC, PX4-based autopilot systems.
- **CAD/CAM:** Dassault SolidWorks, Altium Designer, Experience with CO2 Laser Cutting, SLA and FDM 3D printing and equipment maintenance.
- **Electronics:** PCB Designing, Micro-soldering, Familiarity with major electronic components used in robotics (Common ICs, Various Sensors, Drivers, Logic Converters, etc.), Signal handling with MCUs and PLCs, Experience in digital signal processing and familiarity with common communication protocols.
- **Chemistry:** Experienced with synthesis and analysis of organic polymers, and lab instrumentation such as ¹H-NMR, UV/Vis Spectroscopy, IR Mass Spectroscopy, Fluorescence Spectroscopy, Fume Hood, rotavapor, etc.
- **Others:** , L^AT_EX, Adobe Illustrator and Photoshop, DaVinci Resolve, experienced Linux user.



Work Experience

(June 2025 - Current)

- Project Associate at AI and High-Performance Computing Research Centre (AHRC), IIT Bhubaneswar; Field - "ROS Developer, Electronics, System Designer"; Primary contribution till now - Electronic and Sensor System Design and Integration, Software Stack for Robot Operation, User Interface.

(Nov 2023 - May 2025)

- Research Scholar at Dr Subhankar Mishra's Lab, School of Computer Sciences, NISER, Bhubaneswar; Field - "Sensor-Fusion, Perception and Decision Making"; Primary contribution till now - Design and Development of sensor stack, Data Collection and Publication, research on perception and decision making models.

(May-Nov 2023)

- UAV Systems Engineer at UAVIO Labs Private Limited (Now defunct — CIN: U31909KA2021PTC145205); Field - "Autonomous UAVs for GPS-denied locations"; Primary contributions- Design and development of various embedded systems for drone autonomy.

(August 2021- May 2023)

- MSc thesis on *Soft Robotics and Control Strategies for Robotic Prosthetics*. Under the guidance of Dr Subhankar Mishra (School of Computer Sciences, NISER) and Dr Himansu S Biswal (School of Chemical Sciences, NISER).

(June-Aug 2022)

- Summer Intern at "Smart Materials, Systems and Structures Lab", Department of Mechanical Engineering, IIT Kanpur; Topic- "Adaptive Smart Stick for Sit-to-Stand Assistance."; My primary contributions- Design and development of the electromechanical system for sensing and actuation, data collection and processing for training time series ML models.



Education

(2023)

- MSc. Chemistry and CS (Minor): Homi Bhabha National Institute, India.

(2017)

- Class 12th: Central Academy Sr. Sec. School, Ajmer [C.B.S.E].

(2015)

- Class 10th: Kendriya Vidhyalaya, Nasirabad, Ajmer [C.B.S.E].



Achievements

- Received **DISHA Scholarship** from Dept. of Atomic Energy (D.A.E.). [From July 2018 to May 2023]
- Received Merit Certificate and Cash prize from **H.R.D Ministry** for scoring **10 CGPA** in 10th standard. [Year 2015]



Extra Curricular

- Former **Head of RoboTech Club, (N.I.S.E.R)** (2019-2021).
- Former **Mentor Manager** and former **Mentor** of **Avanti Fellows**, J.N.V. Dhenkanel-N.I.S.E.R. Chapter.
- Former **Outreach Member** and **Core Committee Member** of **Zaariya** (Social Service Club of N.I.S.E.R.)



Additional Information

- I am basically from **Kerala**(Aranmula, Pathanamthitta), **India**, But I was brought up in **Rajasthan**(Ajmer), **India**.
 - Can speak English, Hindi, and Malayalam fluently.
 - I like to DIY things; making things is my favourite hobby. Apart from that, I enjoy partaking in music (Amateur Harmonium and Guitar player), driving, and cooking.
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Academic References

1. Dr. Subhankar Mishra, Associate Professor, School of Computer Sciences, National Institute of Science Education and Research, Bhubaneswar (India).
Web: <https://www.niser.ac.in/smishra/> — **Email:** smishra@niser.ac.in — **Phone:** +91-7894731144
 2. Dr. Satish Kumar Panda, Assistant Professor, School of Mechanical Sciences, Indian Institute of Technology, Bhubaneswar (India). **Web:** <https://sites.google.com/iitbbs.ac.in/drsatishkpanda> — **Email:** skpanda@iitbbs.ac.in — **Phone:** +91-674-7137150
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URLs:

1. N.I.S.E.R.: <https://www.niser.ac.in/>
2. UAVIO Labs Pvt. Ltd.: <https://www.uavio.in/>
3. Dr. Subhankar Mishra Lab: <https://www.niser.ac.in/smishra/>
4. RoboTech Club: <https://smlab.niser.ac.in/clubs/robotech/index.html/>
5. Avanti Fellows: <https://www.avantifellows.org/>
6. Zaariya: <https://zaariya.wixsite.com/zaariya>
7. Research: <https://jyozspace.in/research>
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