

NITHIN MATHEW JOJI

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Profile

Passionate electronics engineer with expertise in embedded systems, PCB design, and hardware development. Adept at designing custom Arduino-based solutions, wireless communication systems. Skilled in KiCad, circuit debugging, and IoT solutions. Certified Drone Service Technician under NSQF, with hands-on experience in FPV and surveillance drones. Open-source contributor and mentor, committed to innovation and knowledge sharing.

Experience

Research and Development Engineer |  SOLARBASE™

(June 2025 – On-going)

- Developing innovative and proprietary solutions to enhance solar power systems, inverters and energy management systems
- Conducting research and feasibility studies on advanced embedded control strategies, fault detection algorithms and system optimization for renewable energy solutions.
- Collaborating with cross functional teams to translate technical requirements into practical hardware and firmware solutions for solar based power systems.
- Evaluating and innovating the emerging technologies(MCUs, sensors, power components) into next gen solar products ensuring reliability and performance.

Mentor & Instructor | PCB Design & Embedded Systems

(College of Engineering Chengannur – IEEE PES Workshop, Aug 2024)

- Conducted a hands-on 18-hour workshop on PCB design, circuit debugging, and fabrication.
- Guided students through circuit etching and troubleshooting with real-world applications.

IEEE SIGHT PROJECT LEAD | WATER SURFACE CLEANING ROBOT

(College of Engineering Chengannur 2023-January - Present)

- Lead a team of 6 and involved volunteers to build an autonomous robot to clean water bodies.

Education

- B. TECH in electronics and communication
(college of engineering chengannur)
(2020-2024)
- ADVANCED PG/DIPLOMA IN EMBEDDED SYSTEM AND HARDWARE DESIGN (SMEC, ERNAKULAM) (08-2024 – 04-2025)
- Drone Service Technician
Skill Development Center, GVHSS Aranmula (02/02/2024 – 08/03/2025)

PROJECTS

- Schrödinger Watch – A custom ESP32-S3-based PCB smartwatch with RTC, buzzer, OLED display, battery management, and open-source firmware.

- MiniVieNO – A custom Arduino-compatible development board with a USB-C connector, multiple power breakouts, and optimized for prototyping.
- HydroSense – A smart water level indicator with an OLED display, animated water level visualization, and real-time percentage tracking.
- NFC-Enabled PCB Business Card – A custom PCB business card with an LED status indicator and an integrated NFC antenna for digital interactions.
- ESP32 Desktop Pet – Kilo-Byte (In Progress) – A portable AI-driven robotic pet that interacts with users and runs on an ESP32.
- 12V to 220V DC-AC Inverter – A 400W compact inverter using an NE555 and dual integrator for sine wave conversion.
- Magnetic Levitator (in progress) – A contactless levitation system using electromagnetic fields for floating objects in mid-air.
- Wireless Communication Demo using Coherer Effect – A historical experiment-based project demonstrating early wireless signal reception for educational purposes.

Skills & Abilities

TECHNICAL SKILLS

- Embedded Systems & Microcontrollers – ESP32, Arduino, ATmega, STM32.
- Problem-Solving & Debugging – Efficient troubleshooting of circuits & embedded systems
- PCB Design & Circuit Debugging – KiCad, EasyEDA (previously), Altium (familiar).
- IoT & Wireless Communication – Wi-Fi, NFC, GPS, RF modules, Coherer effect experiments.
- Hardware Development – SMD soldering, circuit prototyping, power electronics.
- Drone Technology – NSQF-certified; FPV, surveillance, and special-category drones.
- Power Electronics – DC-AC inverters, battery management systems, MOSFET switching.
- 3D Printing & Enclosure Design – CAD modelling for electronic enclosures.
- RTOS

SOFT SKILLS

- Technical Documentation – Creating open-source documentation & project repositories
- Public Speaking & Mentoring – Conducted IEEE PES workshops on PCB design & wireless communication
- Project Management – Designing, planning, and executing hardware & embedded projects
- Creativity & Innovation – Passionate about assistive tech & experimental engineering

Achievements

- Mini project got selected as a hardware project exhibit for Keraleeyam 2023 for KTU university stall among 15 other colleges
- Secured silver prize under best hardware project in IIT PALAKKAD, Techfest organized by KSCSTE among 60 college projects all over Kerala
- Selected to the core team of IHRD THARANG 2023 TECHFEST as media and live stream coordinator.

Languages Known

- Malayalam (native)
- English (Professional Proficiency)
- Hindi(beginner)

Links

LinkedIn: <https://www.linkedin.com/in/nithin-mathew-joji-591a86202/>

GitHub: [nithinmathewoji \(Nithin Mathew Joji\)](https://nithinmathewoji.github.io/portfolio-new/)

Portfolio: <https://nithinmathewoji.github.io/portfolio-new/>

Remarks/Notes