Saju Khakurel

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●◖ Blogs 🔗 Website

🎓 EDUCATION

Joint Master's Degree Erasmus Mundus Programme
European Master on Embedded Intelligence Nanosystems Engineering (EMINENT)
2024/10 – present | France

Bachelor's Degree in Electronics and Communication Engineering
Tribhuvan University, Institute of Engineering, Pulchowk Campus
2017 – 2022 | Lalitpur, Nepal

📁 PROJECTS

Disinfectant Robot ⬈
Funded by Nepal Academy of Science and Technology (NAST)
2020/07 – 2021/06
- Contributed to a COVID-19 biomedical research initiative by designing, fabricating, and programming the embedded system for a disinfectant robot.
- Executed PCB design, developing the robot's core infrastructure, and engineered a 2D disinfectant spray mechanism controllable via Bluetooth-enabled mobile app.

Automatic Modulation Classifier using DL ⬈
Final Year Project, Pulchowk Campus
2021/05 – 2022/04
- Developed an intelligent system utilizing Deep Learning models to classify modulation types within noisy signals
- Implemented RNN with LSTM architecture and experimented with variations like Bi-LSTM, assessing the impact of attention layers on classification accuracy

Simultaneous Localization And Mapping (SLAM) ⬈
2020/11 – 2021/02
- Implementation of tiny SLAM algorithm using turtlebot3 packages provided by ROS and aided by simulating as well as visualizing tools
- Deployed the Particle Filter for optimizing the position of the bot on the map

Rockbye Baby
AI powered Smart Cot
2020/01 – 2020/02
- Winner of LOCUS Project Competition - SDG 3 category, LOCUS 2020
- Designed a moisture sensor using a 555 timer

💼 WORK EXPERIENCE

Embedded System Engineer (Vehicle Software)
Yatri Design Studio
2021/12 – 2024/09 | Kathmandu, Nepal
- Completed the development of a comprehensive Over-The-Air software project for embedded systems in bikes and charging stations
- Created an internal server for charging stations to optimize functionality
- Programming for a one-wire temperature sensor, handlebar push buttons, OBD Flash, Automatic Driving Assistance System, MMC interfacing

Communication Officer
Yatri Energy, Supported by USAID- Urja Nepal
2023/07 – 2024/09 | Kathmandu, Nepal
- Maintain database of Yatri Energy Public Charging Station Project
- Organize an EV Focus group study program among the EV-concerned authorities and users in Nepal

Intern
Yatri Design Studio
2021/12 – 2022/04 | Kathmandu, Nepal
- Conducted a research-oriented internship focusing on Over-The-Air programming using C/C++ languages
- Successfully developed a custom bootloader in the STM32 series, enabling the flashing of new application code received through UART

Hardware Designer and Embedded System Programmer
Robotics Club, Pulchowk Campus
2018 – 2020 | Lalitpur, Nepal
- Contributed to PCB design, fabrication, and testing for the electronics hardware of robots participating in ABU ROBOCON 2019 and 2020
- Coding for rotary encoders to compensate the yaw

Avionics system designer, Team Member
NEAR Aerospace
2020/08 – 2020/12 | Lalitpur, Nepal
- Contributed to the design and production of data acquisition modules
- Conducted research focused on enhancing control systems for optimized and safe aircraft landings

On-Device Basketball Activity Recognition | Bangle.js 2 & TensorFlow Lite

2025/05 – 2025/08

- A group project for the "Professional Design Experience" course, supervised by Prof. Dr. Kristof Van Laerhoven.
- Developed & optimized LSTM, CNN, and Hybrid models to classify 19 basketball activities on a Bangle.js 2 smartwatch (256KB RAM).
- Achieved 79.3% accuracy with a DeepConvLSTM model; implemented full data pipeline and model quantization for deployment.

🧩 VOLUNTEER AND LEADERSHIP

IEEE Student Branch
Committee Member

2020/02 – 2022/04 | Pulchowk Campus

- The first batch of committee members
- Organized multiple programs like webinars, blood donations,and weekly tech talks
- Social Media Handling

Instructor/Mentor
Locus 2019/2020/2022

2019 – 2022 | Pulchowk Campus

- Contributed to teaching both fundamental and advanced hardware courses
- Topics covered Breadboarding, Arduino, Soldering, Sensors, Motors, PCB design, fabrication, and programming

Instructor/Mentor
Godawari Residential School

2020/01 – 2020/02 | Godawari, Lalitpur

- Mentored middle school students for their science exhibition regarding technical projects conducted by Robotics Club, Pulchowk Campus

Teacher
Skill Tour

2024/05 – 2024/09 | Lalitpur, Nepal

- Introduce programming to school children, focused on C programming
- Teach them basics of robotics via Arduino like pin signal, sensor interfacings like ultrasonic, IR, LDR

Focus Group Discussion
Yatri Energy, Powered by USAID

2024/04 – 2024/05

- Conducted two-week-long awareness campaign regarding charging stations and EVs via travelling to the major cities of Nepal
- Presentation followed by group discussion and interactive session regarding the perception of EVs with the people around the nation

🧠 SKILLS

Programming and AI (Python, C/C++)

Embedded Systems & Firmware

Robotics & Automation

Communication & Protocols   Hardware & Tools

📖 PUBLICATIONS

Book Contribution

- Maharjan, Asim, and Saju Khakurel. "Introduction to IoT." IoT, Machine Learning and Blockchain Technologies for Renewable Energy and Modern Hybrid Power Systems, edited by C. Sharmeela et al., River Publishers, 2022, pp. 1–23