M RANJITH RAI

8197988668 ◇ Mangalore, Karnataka
ranjithraimerla@gmail.com ◇ linkedin.com/in/m-ranjith-rai

OBJECTIVE

Embedded Design Engineer with hands-on experience in developing production-ready embedded systems involving motor control, power electronics, and MCU-based firmware. Seeking to contribute to end-to-end product development including hardware design, low-level firmware, debugging, and system validation.

EDUCATION

B.E in Electronics and Communication Engineering 2021–2025
St Joseph Engineering College, Mangalore CGPA: 9.08

SKILLS

Technical Skills : Embedded C, MCU-based firmware, PMSM/Induction motor control, basic FOC, MPPT, PI controllers, Analog design (SMPS(Flyback),Buck converters, oscillators, RC filter), RS485, Modbus RTU.

Soft Skills : Problem solving, Adaptability, Attention to detail, Technical communication.

EXPERIENCE

Embedded Design Engineer Feb 2025 – Present
Brevera Technologies Pvt. Ltd *Mangalore, Karnataka*
(Intern: Feb 2025 – May 2025, Full-Time: Jun 2025 – Present)

- Worked on end-to-end development of embedded systems involving motor control, power electronics, and MCU-based firmware.
- Contributed to multiple embedded projects including water purifier controllers, solar water pump systems (MPPT), and PMSM/ACIM motor control using Field-Oriented Control (FOC).
- Worked with multiple microcontroller platforms including TI C2000, Nuvoton, CMS (CM Semicon), and Holtek across different embedded products.
- Contributed to hardware design, board bring-up, and system-level debugging of embedded control boards.
- Implemented peripheral interfacing and communication using protocols such as RS485 and Modbus RTU.

PROJECTS

Solar Water Pump and Motor Control System : Worked on embedded firmware and hardware validation for solar water pump controller involving MPPT, motor control, power electronics, and system protections. Contributed to board-level testing, debugging, and performance improvements, gained strong practical understanding of PMSM/ACIM motor control and Field-Oriented Control (FOC) through hands-on work with TI C2000–based motor control hardware.

Water Purifier Control System : Developed embedded firmware for a microcontroller-based water purifier system, controlling UV lamp, pump, buzzer, and safety sensors. Contributed to the TDS measurement algorithm using frequency-based sensing and integrated peripheral interfacing and control logic for reliable system operation.

Production Test Automation and DUT Validation Jig : Developed a Python-based test automation system for embedded control boards, interfacing with DAQ hardware and a custom test jig to automate validation workflows and log results for production traceability.

Low Power SRAM Design (VLSI Project) : Designed and analyzed a low-power SRAM architecture focusing on power optimization and timing trade-offs, with emphasis on read/write stability and energy efficiency for battery-operated applications.