

Shantanu Deshmukh

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🐙 GitHub | 🔗 LinkedIn

Education

BITS Pilani, K K Birla Goa Campus

2021 - 2025

B.E. in Electronics and Communication Engineering

CGPA: 8.31

Relevant Courses: Digital Design, Operating Systems, Microprocessors Programming and Interfacing, Embedded Systems Design, Analog and Digital VLSI Design, Computer Architecture

Projects

RISC-V Based Polynomial Multiplier

2023

Research Intern at CEERI Pilani

Xilinx Vivado, Xilinx Vitis, Verilog, Embedded C, BlueSpec Verilog

- Worked on speeding up Post Quantum Cryptographic algorithm (Kyber) on RISC-V CPUs by designing and integrating a peripheral to speed up NTT (Number Theoretic Transform) calculations
- Worked on indigenous Shakti RISC-V processors on Digilent FPGA development boards and the Zedboard, and developed AXI4-lite peripherals to interface IPs with the same

Project Kratos

2022 - Present

Controls/Electronics Core Member

C++, STM32, Rust, Python, Arduino, ROS

Project Kratos is a multidisciplinary student team that participates in Mars rover competitions all around the world

- Maintained and managed electronics on the rover
- Wrote interfacing and communication code for the STM32F4, which serves as the main microcontroller on board
- Ported CytronMDDS30 Serial communication libraries from Arduino code to STM32F4 (Rust and C++)
- Created a custom protocol for communication over UART to send sensor and control data

Visio (and other projects)

2023 - Present

SenseLab, under Prof. Sougata Sen

ESP-IDF, C++, UART/SPI/I2C

- The project aims to create smart glasses to provide aid to visually impaired people
- Working on a network protocol for communication between multiple ESP32 microcontrollers
- Working on a stackable, extensible development board system with sensors based on STM32 microcontrollers for IoT applications

Smart Socket

2023

Part of coursework: Embedded System Design

Embedded C, STM32, ARM Keil uVision

- Created a STM32 microcontroller based power usage monitoring device, with 4 mains plugs supported
- Internal timers used to allow user to set usage limits on each plug
- Monitored power using an AC step down circuit and STM32's built-in ADCs

Linux Kernel Driver for I2C Display

2023

Part of coursework: Operating Systems

C, Linux, I2C, SMBus, Raspberry Pi

- Created a Linux kernel-space driver, with a file interface in /dev/
- Used the Linux kernel I2C/SMBus subsystem to talk to a 16-character LCD display
- LCD connected to I2C pins of a Raspberry Pi 3

Leadership, Volunteering and Achievements

Winner of the Byte Bending Championship

A pan-India embedded systems hackathon held by T-Works, Telangana

Sub Coordinator | *Electronics and Robotics Club, BITS Goa*

2023 - 2024

Involved in managing the budgeting and events, managing junior members and club PR, supervising and guiding projects and vetting project proposals

Teaching Assistant | Course: Microprocessors Programming and Interfacing

Committee Member | *Sandbox Innovations Lab*

2023

Core Member | *Project Kratos*

2023

CTE + ERC, BITS Goa | *Instructor for course Introduction to Robotics*

2023

Quark Summer Term Projects, BITS Goa | *Instructor for ERC and Project Kratos courses*

2023

Core Member | *Literary and Debating Club, BITS Goa*

2023

Skills

Languages: C/C++, x86 assembly, ARM assembly, Rust, Python, Verilog

Technologies & Tools: Git, Linux, Docker, MATLAB, STM32Cube toolkit, ESP-IDF, ROS, ARM Keil uVision