

# MADHURA HANDE DESHMUKH

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## EDUCATION

**Government College of Engineering and Research, Savitribai Phule Pune University**

Pune

Bachelor of Engineering in Instrumentation and Control

2019 - 2023

- Grade: 8.74 CGPA
- Achievement: 10th rank in Savitribai Phule Pune University
- Coursework: Embedded Systems , Control Systems, Analog & Digital Circuits, Sensors, Actuators

## TECHNICAL SKILLS

**Programming Languages:** C, C++, Python, Embedded C

**Microcontrollers:** STM32, MSP430, Atmega 2560

**Interfaces:** ADC, DAC, DMA, Timer, UART, SPI, I2C, One-wire, USB

**Equipment:** Oscilloscope, Logic Analyzer, Function Generator, Multimeter, DC load

**Development Tools:** Keil uVision, STM32 Toolchain, Code Composer Studio, Eclipse IDE, VS Code, Altium , Eagle

**Hardware:** DC, BLDC and Stepper motor drivers, PCB design, PID controllers, Control Systems, Pneumatic actuators

**Languages:** English - working proficiency, Hindi & Marathi - native, Japanese - JLPT N4 certification

## EXPERIENCE

**Noccarc Robotics**

Bhosari, Pune

**Firmware Engineer**

June 2024 – present

- Developed and maintained firmware for Patient Monitors and ventilators, ensuring IEC compliance and high accuracy.
- Designed scalable and modular firmware architecture, enabling future upgrades and new feature integration.
- Collaborated with cross-functional teams for development and integration of NIBP, IBP, ECG, Temperature, Capnography modules for advanced Patient Monitor and Volumetric Capnography analysis feature for Ventilator.
- Conducted hardware-software integration testing, reducing system errors by 30% and ensuring reliable operation.
- Improved communication protocols between sensor modules and control boards for real-time, accurate data acquisition.

**Embedded Software Intern**

October 2023 – June 2024

- Developed and optimized algorithms for a physiological monitoring module, achieving 98% accuracy with 2% deviation.
- Designed PCB test fixtures, enhancing coverage, reducing manual efforts and efficiency by 70%.
- Developed software for prototype devices, achieving consistent performance within medical precision thresholds.

## ACADEMIC PROJECTS

**Design and Development of Balancing Robot**

October 2022 - May 2023

- Built a dynamically-stable mobile robot designed to balance on a single spherical wheel (ball).

**Robotic Hand Prosthesis**

August 2021 - September 2022

- Built a robotic hand where its movement is controlled using electrical signals from volitional movement in hand.
- Achievement: Rank 2 at COEP Tech I2I Competition

**Arrow Throwing Robot and Arrow Picking Robot**

September 2020 - July 2021

- Designed and built holonomic robots for ABU Asia - Pacific Robot Contest 2021 with BLDC, DC, stepper motors and pneumatic as primary actuators using advanced locomotion - swerve drive and four wheel mecanum drive.
- Achievement: All India Rank 6 at ABU ROBOCON 2021

**Rugby Ball Pick - Place Robot and Rugby Ball Kick Robot**

August 2019 - June 2020

- Designed and built holonomic robots for ABU Asia - Pacific Robot Contest 2020 with BLDC motors and pneumatic as primary actuators using triwheel omni drive and four wheel mecanum drive.
- Achievement: All India Rank 14 at ABU ROBOCON 2020

## OTHER RESPONSIBILITIES

**Robotics Research Lab**

Government College of Engineering and Research, Pune

**Core Team Member**

September 2019 – August 2021

- Collaborated with a team of 25+ students for annual ABU Asia-Pacific Robot Contests, improving overall team productivity by 25% through structured work analysis and efficient task distribution.
- Mentored juniors on competition projects and academic applications, providing guidance and technical support.