Shashank Shekhar

Graduate student
for Masters in Robotics,
University of California, Riverside

+1-(951)573-1954
sshek014@ucr.edu
linkedin.com/in/shashank-shekhar
shashankshekhar.tech

Summary

I am currently pursuing a Master's in Robotics at the University of California, Riverside. As an Electronics Engineer and robotics enthusiast, I am passionate about designing and building innovative projects. I have a solid foundation in circuit design, layout and prototyping.

Education

Degree	Institute	University	Year
Graduate	Bourns College of Engineering	University of California Riverside	Sep. 2024 - Present
Undergraduate	Sharda School of Engg. & Tech.	Sharda University	2018-2022

Experience

- **Orangewood Labs (YC-18)** *May 2023 - Aug. 2024*
  Electronics Engineer
  – Designed multi layer STM32-based PCBs for various electronics subassemblies, with expertise in working with hardware interface for protocols such as GPS, Wi-Fi, Bluetooth, CAN Bus, SPI, I2C, UART, USB, RS 232 and RS 485.
  – Developed ARM-based controllers for high-power B.L.D.C. based robotic joint actuators with torque, position and velocity control capabilities, integrated with electromagnetic brakes and communication protocols such as CAN Bus and RS485.
  – Analyzing and troubleshooting electronic sub-assemblies in 6-axis robotic arms to identify and resolve issues that arise during operation and malfunction.
- **Triassic Aerospace** *Nov. 2022 - March 2023*
  Mechatronics engineer
  – Oversee drone fabrication, prototyping, and electrical testing for optimal performance and quality control.
  – Design, fabrication and firmware testing for BLDC motor controllers and ARM Based Flight controller boards.

Technical Skills

- **Circuit design, Layout & Prototyping Softwares**: KiCAD, P.C.B. Prototype fabrication, Circuit debugging, D.S.O. Operation, Soldering (THT & SMD) components, P.C.B.A. Operation, SMD Rework.
- **3D Integration Softwares**: Solidworks, Fusion360, AutoCAD, Autodesk Meshmixer, 3D Slicer
- **Operating Systems & Programming Tools**: Windows, Linux, Python, C, Arduino
- **Hardware tools & Machining operations**: 3D Printing (F.D.M.), Laser cutting & engraving operations, Part fabrication(Lathe Operation, Welding ,Drilling & Milling)

Projects

- **nanoDriveV1.0 - BLDC motor driver with F.O.C.** *July 2023 - In Progress*
  Personal Project **nanoDriveV1.0**
  – A prototype board for B.L.D.C. (40V max & 15A max) Control utilizing the F.O.C. algorithm. The current version has undergone significant optimization, adhering to PCB design rules.
  – Currently, I am working on implementing various control loops to execute different motion trajectories. My goal is to showcase its capabilities as a universal joint controller with minimal wiring for communication. Ultimately, these controllers will communicate with each other using the ESP-NOW communication protocol.
- **Upper Limb Exo-suit for Motion Amplification and Medical Rehabilitation** *Jan 2022 - May 2022*
  Academic Project **Youtube**
  – The objective of this project is to create an electromechanical system that augments upper limb mobility, with dual purposes of aiding industrial applications and serving as a tool for medical rehabilitation.
- **Low-Cost B.L.D.C. Actuator Fabrication using 3D Printing** *Jan 2021 - Jan 2022*
  Academic Project **Youtube**
  – Created an affordable, adaptable robotic joint actuator, including a key element of testing the reliability and feasibility of 3D-printed planetary gearboxes in high-speed maneuvers.

Field of Interest

My areas of interest include 3D modeling, brushless actuator systems, mechatronics, quadrupedal legged robotics, mobile robotics, Robot Operating System (R.O.S.), manipulator arms, electric vehicles and embedded systems design.

Certifications

- **Introduction to Biomedical Engineering** Coursera
- **Understanding Research Methods** Coursera
- **Generative Design for Part Consolidation** Coursera
- **CSWA – Mechanical Design** Dassault Systèmes

Achievements / Awards

- Granted Design patent of **Brushless D.C. Motor** published in Indian Patent Journal (April 2023).
- Awarded Chancellor's gold medal for **Best Student Innovator** of Sharda University. (Oct. 2022).
- Granted Design patent of **Brush-less D.C. Motor Actuator** published in Indian Patent Journal (May 2022).

Miscellaneous

Hobbies: Cooking, D.I.Y. Projects, Trekking. **Languages:** English, Hindi.