Samir Bhattarai

samirbhattarai135@gmail.com 6013078563 Hattiesburg, MS **Portfolio**

Education

B.A, Computer Engineering–University of Southern Mississippi Hattiesburg, MS(May 2027)
- GPA – 4.0

Tech Stacks

Programming Languages:	C++, Python, Matlab, JavaScript, HTML, CSS
Libraries/Frameworks:	ROS, OpenCV, Keras, Tensorflow, MatplotLib, Django, React
Databases / Platforms:	Fusion 360, Gazebo, Docker, Git, GitHub, MySQL, MongoDB
Other:	Circuit Design, Digital Logic, Algorithms and Data Structures, Embedded Systems

Selected Experience / Open-Source

Research Assistant – University of Southern Mississippi Aug 2024 - Present
- Developing a robot with real-time object detection using a Raspberry Pi camera and YOLOv9
- Applied ROS for path planning, obstacle avoidance, and localization to ensure precise movements
- Designed advanced avoidance algorithms, acheiving 88% route efficiency and 93% collision reduction

Classification of Zero-Day Exploitation Types | Github May 2024 - Aug 2024
- Used a CNN classifier to categorize Zero-Day exploitations across companies since 2014 by exploitation type.
- Applied extensive feature engineering, including categorical encoding and feature scaling, to achieve 88%

KritiSana | Github Apr 2024 - Sep 2024
- Built a recommendation website using Python, Django, and REST Framework, providing personalized product suggestions to boost user engagement and conversions.
- Implemented real-time data analysis with Python, Keras, and Pandas, improving sales and optimizing recommendations.
- Integrated Chart.js and D3.js to create a dynamic dashboard for visualizing customer interactions and tracking recommendations.

ESP32 TTS With Open AI | Github Aug 2024 - Sep 2024
- Designed a system for real-time Bluetooth audio streaming and MP3 file downloads via a local web server, using OpenAI's TTS API
- Utilized SPIFFS for storage, WiFi for connectivity, and API communication for file streaming and downloads.

Computerized Numerical Controlled (CNC) Printer Apr 2022 - Aug 2022
- Engineered a CNC printer with a precise pen mechanism for printing 2D text and images across X-Y axis
- Coded an Arduino-based system to process and print digital inputs onto paper using stepper motors

Extracurricular Experience

USM ACM-IEEE Robotics Club Sep 2023 - Present
- Leadings prototype design for locomotion, cargo pickup, and sorting mechanisms using Autodesk Fusion 360, ROS, and Gazebo for the 2025 competition.
- Built hardware and developed 30% of the code for locomotion and servo mechanism for the flag display in the 2024 competition.

President – CCRC Scientific Circle Apr 2022 - Mar 2023
- Tested stationary and sun-tracking solar panel setups (with/without wipers), demonstrating a 20-25% efficiency increase in sun-tracking systems with wipers
- Engineered a Battle Bot using Arduino ATmega 328 and a 433 MHz RF module for responsive navigation and optimized performance.

Certifications

- Modern Robotics: Mechanics, Planning, and Control - **Northwestern University / Coursera**
- Integrated CAD/CAM/CAE - **Autodesk / Coursera**
- Data Analysis with Python - **FreeCodeCamp**
- C++ for Programmers - **Codecademy**

Honors & Awards

- Presidents List Scholar: Fall 2023, Spring 2024, Fall 2024 – University of Southern Mississippi
- Academic Excellence Award, Full Tuition Scholarship – University of Southern Mississippi
- Winner - LOCUS 2020, 17th National Technological Festival SDG 7 Category – Sun-Tracking Solar Panel project
- 1st runner-up – Kathmandu University, Annual Robotics Festival – Battle Bot