

Samir Bhattarai

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Hattiesburg, MS

Portfolio

EDUCATION

University of Southern Mississippi
Computer Engineering Bachelor's Degree

Hattiesburg, MS
Aug 2023 - May 2027

SKILLS

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, SQL, MongoDB
Other: Analog & Digital Circuit Design, Embedded Systems, Algorithms and Data Structures

SELECTED EXPERIENCE / OPEN-SOURCE

Research Assistant – University of Southern Mississippi *Fusion 360, ROS, Gazebo, Raspberry Pie, YOLO*

- Leading development of an autonomous real-time object detection robot using a Raspberry Pie camera and Yolov9
- Applied ROS to implement path planning, obstacle avoidance, and localization algorithms for precise robot movements.
- Designed advanced obstacle avoidance algorithms, improving route efficiency by 88% and reducing collisions with 93% accuracy

Classification of Zero-Day Exploitation Types | Results *Python, Tensorflow, Pandas, Matplotlib, Numpy*

- Used a CNN classifier to classify the Zero-Day exploitations on various companies since 2014 based on the exploitation type
- Used extensive feature engineering, encoded categorical variables, and scaled features to optimize the performance and achieve an accuracy of up to 88%

Software Engineering Intern – KritiSana *Python, Django, REST, Tailwind, Pandas, JavaScript, MySQL, SQLite*

- Developed an ML-powered Full-Stack recommendation website using Python, Django, and REST Framework, enabling personalized product suggestions to enhance user engagement and drive conversions
- Utilized real-time data analysis using Python, Keras, and Pandas to identify customer preferences, resulting in increased sales and optimized product recommendations
- Integrated Chart.js and D3.js for a dynamic dashboard, visualizing customer interactions and tracking recommendations for data-driven decision-making

Embedded Systems Intern – Shree Indrenee Vidya Mandir *Arduino, C++, ESP32 Module, OpenAI TTS*

- Developed an ESP32-based system for real-time Bluetooth audio streaming and a local web server for MP3 file downloads using OpenAI's TTS API
- Implemented SPIFFS for file storage and WiFi for network connectivity
- Integrated API communication and embedded web server to handle file streaming and downloads

Computerized Numerical Controlled (CNC) Printer *Arduino Mega, Arduino IDE, Tinker CAD*

- 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

Project Leader – USM ACM-IEEE Robotics Club

- Leading the initial prototype design for robot locomotion, cargo pieces pickup, and sorting mechanisms using Autodesk Fusion 360, ROS, and Gazebo for the Southeast Con 2025 hardware competition
- Contributed to building robot hardware and around 30% of the code in the robot's locomotion and servo mechanism for the flag display for the Southeast Con 2024 hardware competition

President – CCRC Scientific Circle

- Organized and tested four solar panel setups—stationary (with and without wipers) and sun-tracking (with and without wipers)—demonstrating a 20-25% efficiency increase in sun-tracking systems with wipers.
- Engineered a Battle Bot using Arduino ATmega 328 microcontroller with a 433 MHz RF transmitter/receiver module for responsive input and output for optimized navigation in minimum time

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
- LOCUS 2020, 17th National Technological Festival SDG 7 Category 1st Place – Sun-Tracking Solar Panel project
- Kathmandu University, Annual Robotics Festival - 2nd Place – Battle Bot