Yug Patel

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Education

Missouri University of Science and Technology Rolla, MO

Bachelor of Science in Computer Science; GPA: 3.74 *Aug. 2022 – Present (Expected: Dec 2025)*

Experience

Undergraduate Research Assistant Oct 2023 – Present

Department of Biology, Missouri University of Science and Technology *Rolla, MO*

- Developed a comprehensive simulation program to model complex life cycles and behaviors of microorganisms in a dynamic environment, in collaboration with a team of biologists, ensuring biological accuracy.
- Designed and built a user-friendly web application capable of running and comparing multiple simulations concurrently, with integrated real-time data collection and visualization, facilitating cross-disciplinary research.
- Integrated an automated data pipeline with the web application for real-time data processing, storage, and analysis, improving efficiency and enabling deeper insights across biological models.

NSF-REU Research Intern May 2024 – Aug 2024

Missouri University of Science and Technology *Rolla, MO*

- Engineered a testbed to assess cognitive load using real-time EEG (brain activity) and PPG (heart rate) sensor data, with precise synchronization of wearable devices to ensure high accuracy in data collection.
- Led the development of 2 out of 3 cognitive tasks, handling both frontend and backend components, resulting in enhanced performance and system efficiency.
- Integrated EEG (via MATLAB) and PPG (via BLE) sensors, enabling real-time physiological data capture and analysis for cognitive load prediction.
- Planned and initiated the development of a Convolutional Spiking Neural Network (CSNN) model to predict cognitive workload, leveraging EEG and PPG data for accurate real-time insights.

Undergraduate Researcher Jan 2024 – Present

Department of Computer Science, Missouri University of Science and Technology *Rolla, MO*

- Web scraped and annotated over 27,000 disaster-related tweets with metadata (location, time, severity), applying text normalization and handling imbalanced data to build a high-quality dataset for first responder classification.
- Developed and fine-tuned a RoBERTa-based machine learning model that achieved an accuracy of up to 98% in classifying first responders across various crisis events.
- Built an interactive web application to visualize datasets and model predictions, improving accessibility and providing actionable insights for researchers and emergency responders.

Web Developer Jun 2023 – Aug 2023

Infosoft Systems Inc. *Overland Park, KS*

- Developed responsive web pages using HTML, CSS, and JavaScript, ensuring mobile responsiveness, optimized load times, and adherence to web accessibility standards.
- Collaborated closely with the design team to create visually appealing and user-friendly interfaces, resulting in a 20% increase in user engagement.
- Integrated data analytics features to track user behavior, enabling data-driven decisions and real-time design adjustments that enhanced the overall user experience.

Projects

Global Food Library | *Python, Flask, SQL, TailwindCSS* September 2023

- Developed a dynamic culinary platform with personalized recipe management, advanced search capabilities, and interactive tools like ratings, custom cookbooks, and dietary filters, allowing users to discover/organize recipes.
- Engineered a secure and scalable database infrastructure with robust admin controls and user authentication, ensuring data integrity and seamless user experience.

Technical Skills

Languages: Java, Python, C, C++, SQL, JavaScript, TypeScript, C#, Rust, MATLAB
Frameworks: React, Node, Express, Flask, Django, Spring Boot
Developer Tools: Git, Docker, AWS, Linux, Kafka, MQTT
Libraries: Pandas, NumPy, Matplotlib, XGboost, Scikit-Learn, SciPy, PyTorch, TensorFlow, Selenium