

# Ammar Ali

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## EDUCATION

• **Bachelors in Brain & Cognitive Science, Minors in Computer Science & Statistics** Aug 2022 - May 2025  
*University of Illinois at Urbana-Champaign, College of Liberal Arts & Science*

- **Courses:** Artificial Intelligence, Data Analysis with Probabilistic Graph Models, Neural Interface Engineering, Signal Processing, Database Systems, Statistical Analysis for Biomedical Imaging, Data Structures & Algorithms, Bioinformatics, Probability & Statistics for CS, Biostatistics with R, Cognitive Neuroscience Lab with Matlab

## EXPERIENCE

• **Software Engineer** Feb 2023 - Aug 2024  
*Disruption Lab at Gies* Champaign, IL

- Engineered an **OpenAI-powered chatbot** to support external clients and assist navigation of internal clusters for the UIUC Data Science Research Services; built using **Python, JavaScript, Langchain** and **Steamlit**.
- Constructed parsing functions to transform training documents to .txt and embeddings, facilitating efficient search in a vector space. Used **pytest** & **GitHub Actions** for automated testing protocols.

• **Machine Learning Engineering Intern** Jun 2024 - Aug 2024  
*University of Illinois Urbana-Champaign* Remote

- Trained **YOLO-V8** object detection model to identify recyclable materials on UIUC campus waste bins in real time. Implemented with **Python, Pytorch, HuggingFace, Docker** & **Github Actions**.
- Assisted data preprocessing (image augmentation, labeling) & hyperparameter tuning for faster detection and reduced annotation errors by more than **20%** with **OpenCV**.

• **Field Data Engineering Intern** Jun 2023 - Nov 2023  
*SpotGenius* Lombard, IL

- Enhanced video monitoring & ticketing systems in parking lots. Introduced crop zones for refined license plate detection at high speeds; improving **License-Plate Recognition (LPR)** for anomaly detection and secure real-time streaming with **Python-scripts** & **Azure**.
- Gained proficiency in data streamlining & processing for multi-camera integration in **Azure Cloud** & **FortiMonitor**.

• **Software Development Director** Aug 2022 - Aug 2023  
*Illini VEX Robotics* Champaign, IL

- Directed the development of a **Brain-Computer Interface(BCI)** car, using **EEG** signals to enable movement in a remote-control car. Developed **K-Nearest Neighbors (KNN)** clustering algorithm for direction classification.
- Researched and implemented template matching with **OpenCV**, to improve the real-time detection accuracy of on-vehicle cameras in motion.

## PROJECTS

• **VR-Neurofeedback Therapy** Aug 2023 - Present  
*EEG-Based Emotional State Classifier with Tensorflow*

- Engineered real-time neurofeedback system with **Python** & **ROS** for focus detection from **EEG** signals. Integrated VR using **C#** & **Unity**, via **UDP**. Dynamically adjusts visual feedback elements for a closed-loop cognitive therapy experience, improving the user's attentional control.
- Employed signal processing techniques like filtering (**Notch+Bandpass**), spectral analysis (**FFT+PSD**), artifact removal (**ICA/PCA**), and feature extraction (**time/frequency/wavelet domains**).
- Implemented ML models like **SVM, Random Forest**, & **CNNs (TensorFlow)** for focus classification.

• **ZKP Validation System** Jan 2023 - May 2023  
*Blockchain-Based Auditing System / RSM*

- Developed the first-ever blockchain auditing system demo using for faster digital asset validation and analysis using **Zero-Knowledge Proofs (ZKPs)**. Built with **Python, Circom** & **JavaScript (Snark.js)**.

## TECHNICAL SKILLS

**Languages:** C++, Python, R, Javascript, Java, SQL, TypeScript, HTML+CSS

**Frameworks & Libraries:** NumPy, Pandas, Scikit-learn, OpenCV, PyTorch, TensorFlow, CUDA, Ray, ROS, Flask

**Developer Tools:** Git, Github, UNIX, Docker, Kubernetes, Node.js, CMake, GDB, Unity

**Cloud/DB:** AWS, Azure, Google Cloud, Power BI