Muhammad Wasay

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Education

Namal University   Expected June 2025
Bachelor of Science in Computer Science   *Mianwali, Pakistan*
- **Relevant Coursework:** Data Structures, Analysis of Algorithms, Artificial Intelligence (AI), Software Engineering, Prob & Stat, Digital Logic Design, Computer Networks, Theory of Automata, Operating Systems

Experience

Center for AI and Big Data   Oct 2023 - Present
Student Research Assistant   *Namal University, Mianwali*
- Led the development of an advanced supercomputing project, acquiring extensive expertise in large-scale computational systems and their practical applications. Made significant contributions to the creation of a high-performance computing environment tailored for cutting-edge research in artificial intelligence and big data analytics. Successfully implemented end-to-end large language models, including LLaMA-7B, and deployed customized fine-tuned models to enhance system capabilities and performance.
- Contributed to a team that conducted a spring school for supercomputing and parallel programming, assisting in the delivery of technical knowledge and practical skills to students.

Projects

RISC-V Heterogeneous HPC Cluster Development
- Developed a fully operational, low-power HPC cluster using the RISC-V StarFive VisionFive2 platform with Intel NUC edge device as head node, optimized for energy and computational efficiency, and scalability, achieving a 55% improvement in processing speed for large matrix computations.
- Integrated Wazuh-based SIEM for real-time security monitoring, threat detection, and mitigation, ensuring robust cybersecurity for academic and research environments.
- Implemented federated learning techniques using medical data for decentralized AI model training, enabling privacy-preserving machine learning and collaborative research across multiple institutions.

JPEG Image Compressor | *NumPy, Pillow, OpenCV, Pandas, Matplotlib, Tkinter*
- Implemented an image compression algorithm to reduce the file size of JPEG images while preserving image quality.
- Utilized techniques such as discrete cosine transform and Huffman coding to achieve efficient compression ratios.

Multimodal Network Anomaly Detection System | *TensorFlow, Scikit-learn, Matplotlib, Pandas*
- Designed and implemented a system for detecting anomalies in multimodal data streams, including system logs and network packets.
- Used machine learning techniques such as classifier algorithms and neural networks to identify unusual patterns.
- Contributed to research on new anomaly detection techniques.

Conway's Game of Life | *C++, Raylib*
- Created a simulation of Conway's Game of Life using C++ and Raylib for graphical rendering.
- Implemented interactive controls to allow users to modify the grid and observe the evolution of cell patterns in real-time.

Facebook Clone (in Python) | *Python, tkinter*
- Developed a Facebook clone application with a graphical user interface using tkinter.
- Integrated multimedia features like photo and video uploads, enabling users to share content with their network.
- Devised features such as user authentication, posting updates, commenting, and liking posts.

Technical Skills

Programming Languages: Python, C++
Tools & Technologies: TensorFlow, Scikit-learn, PyTorch, Hugging Face, LangChain, Git, GitHub, MySQL, NumPy, Pandas, Matplotlib, Seaborn, Tkinter, Horovod, MPI
Concepts: Operating Systems, Virtual Memory, Cache Memory, Object-Oriented Programming (OOP), HPC ,Encryption, Decryption, Artificial Intelligence, Machine Learning, Neural Networks, Large Language Models (LLMs), API Development, Agile Methodology, Database Normalization