HAMMAD ATHER

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EDUCATION

Doctor of Philosophy: Computer Science
University of Oregon, Eugene, OR, USA *Jan '21 - Sep '25*
Bachelor of Science: Computer Science
National University of Computer and Emerging Sciences, Lahore, Pakistan *Aug '14 - May '18*

Coursework: Data Science, Machine Learning, Artificial Intelligence, Probability and Statistics, Algorithms and Complexity, Object Oriented Programming, Software Engineering, Web Development, Database Systems, Data Structures

SKILLS

- **Programming Languages and Databases:** Python, C++, C, JAVA, JavaScript, MySQL, AWS DynamoDB
- **Frameworks and Libraries:** Plotly, Matplotlib, Pandas, Jupyter, Keras, Scikit-learn, Django, TensorFlow, PyTorch, Docker, Heroku
- **Platform/OS and Revision Control:** Android, Linux, Windows, MacOS, Git

WORK EXPERIENCE

Lawrence Berkeley National Laboratory **Berkeley, CA**
Research Intern *- Scientific Data Management Group* *June '22 - Present*

- Engineered DXT Explorer 2.0, a novel log analysis tool to visualize Darshan DXT logs for HPC applications
- Successfully migrated the existing solution from R to Plotly, reducing graph rendering time by 82%
- Conducted in-depth research to uncover prevalent I/O bottlenecks in HPC applications
- Extracted I/O performance statistics from 1,000+ Darshan logs using advanced data analytics techniques
- Designed interactive visualizations unveiling I/O issues, cutting benchmark runtime from 211 to 100s
- Published a lead author conference paper in ISC'23 on this work

  Technology stack: Python, R, C, C++, Ggplot, Plotly, Pandas, Git, Docker, Spack

The University of Oregon **Eugene, OR**
Graduate Researcher *- High-Performance Computing Lab* *Jan '21 - Present*

- Diagnosed performance issues of a physics proxy application (P2Z) for parallelization and memory usage
- Utilized TAU for the collection of low-level performance metrics, amplifying optimization insights significantly
- Preprocessed the trace data and harnessed Python plotting libraries to create dynamic visualizations
- Detected performance bottlenecks in different compiler versions of P2Z app, elevating performance by up to 25%
- Created a web app boosting performance data aggregation and visualization, enhancing efficiency by 40%

  Technology stack: Python, C++, SQL, Matplotlib, Seaborn, NVIDIA Nsight

Lahore University of Management Sciences **Lahore, Pakistan**
Research and Development Engineer *– Networks and Systems Group (NSG)* *May '19 - Nov '20*

- Researched the effect of device and network heterogeneity on federated learning (FL)
- Benchmarked FL on Raspberry Pi and Android devices, revealing crucial optimization insights
- Boosted FL execution speed 10% using a compact deep learning solution, reducing model size

  Technology stack: Python, TensorFlow, PySyft, PyTorch, Docker, Keras, Linux, Raspberry Pi

i2c inc **Lahore, Pakistan**
Software Engineer *- Web team* *June '18 - May '19*

- Built robust web apps for banking transactions (Visa, Mastercard clients), ensuring security and efficiency
- Led cross-functional full-stack development, ensuring successful project deployment and team productivity
- Built a new transaction module which enhanced the user experience by reducing task completion time by *30%*

  Technology stack: Java, MVC, Struts Framework, HPE Unified Functional Testing

PUBLICATIONS

- **Hammad Ather**, Jean Luca Bez, Boyana Norris, and Suren Byna, "*Illuminating the I/O Optimization Path of Scientific Applications*", **ISC HPC 2023**
- Jean Luca Bez, **Hammad Ather**, and Suren Byna, "*Drishti: Guiding End-Users in the I/O Optimization Journey*", **PDSW 2022**, to be held in conjunction with SC22
- Aamir Wali, Aliza Lisan, **Hammad Ather**, et al. *"Application in multimedia: from camera to VR"*. **Multimed Tools Appl** 82, 11721–11751 (2023)