BILAL AHMED

West Lafayette, IN

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PhD student working at the intersection of neuroscience and machine learning. Generally interested in generative AI, computer vision and probabislistic modelling.
Looking for an internship opportunity in these areas.

Education

Purdue University	**West Lafayette, IN**
Ph.D. in Electrical & Computer Engineering	*Aug 2021 – Present*

GPA: 3.87/4.0

University of Engineering & Technology Lahore	**Lahore, Pakistan**
B.Sc. in Electrical Engineering (with Honours)	*Aug 2011 – Jun 2015*

GPA: 3.859/4.0

Relevant Coursework

- Introduction to Deep Learning (A+)
- Deep Learning (A+)
- Estimation Theory (A)
- Generative Models (A)
- Computational Imaging (Image Processing II) (A)
- Computer Vision (A+)

Skills

- **Programming Languages:** Python, C, MATLAB

- **Deep Learning Frameworks:** PyTorch, Scikit-learn, PyTorch-Lightning (multi-GPU training), Hugging Face

- **Python Libraries:** NumPy, SciPy, Pandas, Matplotlib, scikit-image, transformers, torchaudio

Conferences

COSYNE 2023	**Montreal, Canada**
Poster: Understanding Auditory Cortex with Deep Neural Networks.	*Mar 9-12, 2023*

Work Experience

Purdue University	**West Lafayette, IN**
Graduate Research Assistant	*Aug 2021 – Present*

- Working on using diffusion models as priors for interpreting Auditory models.
- Auditory cortex modelling in squirrel monkeys, using pretrained deep learning models. (preprint on bioarXiv, under review)
- Trained the wav2letter speech-to-text model from scratch on LibriSpeech (960 hours) utilizing up to 8 GPUs.
- Trained a self-supervised wav2vec2 model on a subset of the Audioset dataset (excluding speech and music) as a general audio processor, using up to 4 GPUs.

Purdue University	**West Lafayette, IN**
Teaching Assistant for Generative Models Course	*Jan 2024 – May 2024*

- Provided one-on-one guidance during office hours, assisting students with understanding advanced concepts in probabilistic generative models.
- Graded assignments and exams, focusing on ensuring conceptual understanding and correct application of generative models.

Fauji Fertilizer Company Limited   **Sindh, Pakistan**
Deputy Executive - Instrumentation & Control   *Sep 2015 – Jul 2021*
- Preventive maintenance at utilities plant, leading a team of 7 staff members.
- Team lead for maintenance of gas turbine (Solar Turbines).
- Carried out system upgrades and reliability enhancement projects.
- Upgraded speed governor at steam turbine, resulting in 8% efficiency enhancement.
- Led the instrumentation team for maintenance activities during annual turnaround.
- Led the fire fighting squad of E&I department to victory during annual competition.

Al-Khawarizmi Institute of Computer Science   **Lahore, Pakistan**
Research Intern   *Jul – Sep 2014*
- Worked on development and installation of solar reflectors at heliostat power plant.
- Tasks included PCB design, soldering, electrical testing, and programming microcontroller using C language.

Awards

National ICT R&D Scholarship (fully-funded for BS(EE))   2011 – 2015

Volunteering

Career Counselling to school children of rural areas (hometown) in Pakistan.   2015 – 2020

Activities & Hobbies

Reading: Investing, Economy, Business

Sports: Cricket, Badminton