Hasnain Irshad Bhatti

http://hasnainirshad.github.io
Daejeon, South Korea

Email : hasnain@kaist.ac.kr
Mobile : +82-010-4240-8980

Education

- **Korea Advanced Institute of Science and Technology** — Daejeon, KR
  Ph.D. in Electrical Engineering (Advisor: Prof. Jaekyun Moon) — *Mar. 2022 – present*

- **Korea Advanced Institute of Science and Technology** — Daejeon, KR
  M.S. in Electrical Engineering (Advisor: Prof. Jaekyun Moon) — *Sept. 2020 – Feb. 2022*
  Dissertation Title: Decoupled Training of Neural Networks with Periodic Knowledge Distillation

- **University of Engineering and Technology, Lahore** — Lahore, PK
  Bachelor of Science in Electrical Engineering; GPA: 3.825/4 , Double Gold Medalist — *Oct. 2016 – July. 2020*

Publications

- H. Kousar*, **Hasnain I. Bhatti*** and J. Moon, "Pruning-based Data Selection and Network Fusion for Efficient Deep Learning," Attributing Model Behavior at Scale (ATTRIB) workshop at Neural Information Processing Systems (NeurIPS), Dec. 2024.
- M. M. Rahimi, **Hasnain I. Bhatti**, Y. Park, H. Kousar and J. Moon, "EvoFed: Leveraging Evolutionary Strategies for Efficient and Privacy-Preserving Federated Learning," Neural Information Processing Systems (NeurIPS), Dec. 2023.
- **Hasnain I. Bhatti** and Jaekyun Moon, "Locally Supervised Learning with Periodic Global Guidance", Hardware Aware Efficient Training Workshop at ICML 2022.
- Wenchao Dong, Bryan Wong, **Hasnain Irshad Bhatti**, Lanu Kim, Meeyoung Cha. "Analyzing Web data to examine the gender pay gap in STEM fields." Proceedings of the Korea Computer Congress (KCC). 2022.
- Wenchao Dong, Bryan Wong, **Hasnain Irshad Bhatti**, Lanu Kim, Meeyoung Cha. "Analyzing Gender Pay Gap in STEM Fields by Life Trajectory." Extended Abstract at the International Conference on Computational Social Science (IC2S2). 2022.
- Dong-Jun Han, **Hasnain I. Bhatti**, Jungmoon Lee, and Jaekyun Moon, "Accelerating Federated Learning with Split Learning on Locally Generated Losses", ICML Workshop on Federated Learning for User Privacy and Data Confidentiality, July 2021.

Experience

- **MoonLab, KAIST** — Daejeon, KR
  Lab Researcher — *Jan 2021 - Present*
  At MoonLab, I have led multiple research projects in distributed machine learning, focusing on improving the scalability and efficiency of neural network architectures. My recent work includes pruning-based data selection strategies and network fusion techniques for deep learning, presented at NeurIPS 2024. I have also worked on evolutionary strategies for federated learning, addressing privacy and efficiency concerns. In addition, my contributions to locally supervised learning have optimized distributed model training processes. I am currently exploring low-rank adaptation methods for full model scaling to enhance adaptability in dynamic environments.

- **Al-Khawarizmi Institute of Computer Science, UET Lahore** — Lahore, PK
  Research Intern — *April 2019 - Feb 2020*
  I developed a real-time accident detection system utilizing deep learning and computer vision on Nvidia Jetson Nano. I worked on monocular depth estimation using vanishing points and blur content analysis and used small ML models for real-time prediction.

- **Advanced Communication Laboratory, LUMS** — Lahore, PK
  Research Intern — *July 2019 - Dec 2019*
  Worked on the estimation of breathing rate of a person using RSS(received signal strength) of WiFi signals. Furthermore, I modeled and evaluated the channel for complex environmental factors in the breathing rate estimation.

Honors and Leadership

- **Young Future Energy Leader**: Khalifa University, 2022-2023.
- **Vice President and Head Robotics**: IET On Campus UET Lahore, 2019-2020.
- **Director Education**: Education for Every Child Foundation, 2019-2020.
- **Dean's roll of honor**: Fall 2016, Spring 2017, Fall 2017, Spring 2018, Fall 2019.
- **Best Microprocessor Project Award**: Electrical Engineering Dept, UET Lahore, 2018.
- **Scholarship Recipient**: Pakistan Engineering Congress (2018, 2019).

Programming Skills

- **Languages**: Python, Pytorch, C, Java, Verilog, x86 assembly, SQL **Microcontrollers**: RPI, STM32, Tiva-C series, Intel Cyclone-V, Arduino