Dilawer Ahmed

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Education

North Carolina State University — Raleigh, NC
PhD Computer Science *GPA: 4.0* — Jan 2021 - July 2025
Courses: *Cryptography, Compiler Construction, Computer and Network Security, Operating Systems*

Lahore University of Management Sciences — Lahore, Pakistan
BS Computer Science — Aug 2016 - May 2020
Courses: *Deep Learning, Network Centric Computing, Artificial Intelligence, Algorithms, Data Structures, Advanced Network Security, Advanced Programming, Programming Languages*

Experience

Microsoft — Mountain View, CA, USA
Software Engineer 2 — Aug 2025 - Present

- Developed critical infrastructure for Microsoft AI - Monetization and Search Engineering
- Developed and deployed into production C++ online implementation to improve image processing in Bing product ads placement using Machine Learning

North Carolina State University — Raleigh, NC
Graduate Research Assistant — Jan 2021 - Aug 2025

- Research Interests: Security, Privacy, and Machine Learning
- Publication: Spying through Your Voice Assistants: Realistic Voice Command Fingerprinting. *Dilawer Ahmed, Aafaq Sabir, Anupam Das.* USENIX Security (2023) https://www.usenix.org/conference/usenixsecurity23/presentation/ahmed-dilawer
- Publication: Analyzing the Feasibility and Generalizability of Fingerprinting Internet of Things Devices. *Dilawer Ahmed, Anupam Das, Fareed Zaffar.* PoPETS (2022) https://petsymposium.org/2022/files/papers/issue2/popets-2022-0057.pdf
- Publication: Poster: Fingerprinting IoT Devices in Open-world Setting. *Dilawer Ahmed, Benjamin Zhang, Anupam Das*, NDSS 2022
- Publication: Understanding the Privacy Implications of Adblock Plus's Acceptable Ads. *Ahsan Zafar, Aafaq Sabir, Dilawer Ahmed, Anupam Das.* ACM AsiaCCS, 2021. https://dl.acm.org/doi/abs/10.1145/3433210.3437536
- Publication: INSPIRE: Instance-Level Privacy-Pre Serving Transformation for Vehicular Camera Videos *Zhouyu Li, Ruozhou Yu, Anupam Das, Shaohu Zhang, Huayue Gu, Xiaojian Wang, Fangtong Zhou, Aafaq Sabir, Dilawer Ahmed, and Ahsan Zafar* In 2023 32nd International Conference on Computer Communications and Networks (ICCCN), pp. 1-10. IEEE, 2023.
- Publication: Analyzing Ad Prevalence, Characteristics, and Compliance in Alexa Skills. *Aafaq Sabir, Abhinaya S. B., Dilawer Ahmed, and Anupam Das.* In 2025 IEEE Symposium on Security and Privacy (SP), pp. 4321-4339. IEEE, 2025.

Microsoft — Redmond, WA, USA
Software Engineering Intern — May 2024 - Aug 2024

- Revamped offline Big Data processing pipeline in Azure Data Lake to optimize for location processing and increased recall by upto 50% increase Ad revenue in certain cases by 350%
- Developed and deployed into production C++ online implementation to improve Ad delivery based on location. Wrote unit tests that increased code coverage and created comprehensive End-to-end testing
- Migrated location processing pipeline away from radius based using Reverse Geocoding in collaboration with Bing Maps team. Saved 87% compute resources while increasing coverage by 25%

Google — Bay Area, CA, USA
Software Engineering Intern — May 2022 - Aug 2022

- Researched cutting-edge GPU virtualization applications for improved ML acceleration in Google Cloud while working independently.

- Built and optimized network latency and bandwidth projection tool for the simulator in C++ to add remote GPU performance estimations while reducing resource utilization and improving workflow
- Migrated C++ code across Google to newer protocol buffer versions saving resources as part of a Community Project. Received peer bonus and personal thanks from the project owner

KalPay Financials Lahore, PK
Chief Technology Officer & Co-founder May 2020 - Dec 2020

- Led the technology division of the company to create the user, merchant and admin full stack applications that powers a funded startup working in FinTech industry in Pakistan
- Created TensorFlow Machine Learning models to facilitate credit decisions and used Node.js, Vue, AWS, MongoDB to create applications
- Optimized merchant on-boarding process to make the changes to merchant side code as minimal as possible and increased small business on-boarding rate by 50% and increased revenue by 30%

Technology for People Initiative Lab Lahore, Pakistan
Software Engineer June 2020 - Dec 2020

- Led the team of 3 students to detect fake reviews on e-commerce platforms such as Amazon. Collected a dataset of product reviews and making use of another public dataset analyzed the existence of fake reviews from automated text generation services such as GPT-2. Submitted the paper to a top security conference
- Converted existing single-threaded libraries, used by the university to make services, in C language to parallel programming paradigm and achieved a speed-up of up to 30x in some functions.

Projects

Android Systems *C/C++, Android Studio, Linux Kernel*
A kernel level android tool that improves memory performance applications on low-end devices. Using different heuristics tweaked different kernel level values of kswapd and lmkd on a per application and phone bases improved the performance of popular apps such as web browsers.

Web Application Development *Vue, GCP, Express, Node.js, MongoDB, REST, Chai, Mocha, TensorFlow, Python*
A cloud-based car insurance application for a multi-national company that aids the decision making process by replacing the traditional risk-assessment model with a data-driven system

Penetration Testing *Mitmproxy, Wireshark, Nmap, Postman*
Analyzed the attack surface of top android apps in Pakistan region on App store for vulnerabilities through tools such as Wireshark, Nmap and Mitmproxy. Found multiple critical bugs and security flaws which enabled account hijacking and sensitive information leaked. Reported 7 critical vulnerabilities in a top food ordering application and got bug bounties

Systems *LLVM, C/C++, YAML, OS Kernels*
Achieved binary debloating of OS Kernel applications. Adapted existing software debloating tool to Kernel level programs and created heuristics to change insecure code patterns to secure code patterns. Reduced the attack surface of programs and made Kernels more suited to specific deployments