Muhammad Tehmasib Ali Tashfeen

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EDUCATION

Fall 2023 – Present
Doctor of Philosophy (in progress), Electrical Engineering and Computer Science
Wichita State University, Wichita, Kansas
Expected completion: Spring 2027. Dissertation: "Automated Detection of Android Lifecycle Anti-Patterns: From Static Analysis to Fine-Tuned Large Language Models."
Advisor: Dr. Zhiyong Shan, Software Analysis and Intelligence Laboratory.

Fall 2015 – Fall 2019
Bachelor of Science, Electrical Engineering
National University of Computer and Emerging Sciences (FAST-NUCES), Peshawar, Pakistan
Honors: Dean's List (Fall 2016, Fall 2017, Fall 2018)

RESEARCH INTERESTS

AI-assisted software engineering; static program analysis; Android application reliability and security; domain adaptation of code language models; empirical software engineering and reproducible evaluation.

RESEARCH EXPERIENCE

Graduate Research Assistant Fall 2023 – Present
Wichita State University, Software Analysis and Intelligence Laboratory

- Developed **LeakScope**, a Soot-based framework translating Android lifecycle obligations into static rules for memory-retention and resource-management patterns.
- Analyzed **627 Android apps** and flagged **485**; compared app-level coverage with Android Lint, SpotBugs, and Infer. [Study Slides]
- Built **3,152 prompt-response examples** and LoRA fine-tuning pipelines for CodeLlama, Llama-3, and StarCoder2; evaluated against GPT-4o and produced research software and benchmark data. [Artifact Overview]
- Lead ongoing work on context-aware fine-tuning of open-source language models for Android anti-pattern detection, with a manuscript in preparation.

PUBLICATIONS

Publication record and citation metrics: Google Scholar; 34 citations, h-index of 3, i10-index of 1 (as of October 2026).

Peer-Reviewed Journal Articles

J1. M. Y. Ayub, U. Haider, A. Haider, **M. T. A. Tashfeen**, H. Shoukat, A. Basit. "An Intelligent Machine Learning Based Intrusion Detection System (IDS) for Smart Cities Networks." *EAI Endorsed Transactions on Smart Cities*, vol. 7, no. 1, e4, 2023. [DOI]

Peer-Reviewed Conference Papers

C1. **M. T. A. Tashfeen**. "Building Blocks of Incident Response: Security Operation Centers." *AIP Conference Proceedings*, vol. 2814, article 030009, 2023 (ICACTCE). [DOI]

Conference Abstracts

A1. **M. T. A. Tashfeen**, M. Y. Ayub, U. Haider, T. K. Bhatia, S. G. Tawaseem, M. A. Ayub. "Intrusion Detection System for IoT Infrastructure." Abstract in "Abstracts of the 1st International Conference on Trends and Innovations in Smart Technologies (ICTIST'22)," section 2.12, *Computer Sciences & Mathematics Forum*, vol. 5, no. 1, article 1, 2023. Conference held online, October 7–8, 2022. [Published Abstract] [Scholar]

Peer-Reviewed Book Chapters

B1. **M. T. A. Tashfeen**. "Intrusion Detection System using AI and Machine Learning Algorithm." In *Cyber Security for Next-Generation Computing Technologies*, CRC Press / Taylor & Francis, pp. 120–140, 2024. [DOI]

B2. U. Haider, H. Shoukat, M. Y. Ayub, **M. T. A. Tashfeen**, T. K. Bhatia, I. U. Khan. "Cyber Attack Detection Analysis using Machine Learning for IoT-based UAV Network." In *Cyber Security for Next-Generation Computing Technologies*, CRC Press / Taylor & Francis, pp. 253–264, 2024. [DOI]

Accepted Doctoral Symposium Contributions

D1. **M. T. A. Tashfeen**. "Toward Reliable Detection of Android Lifecycle Violations with Static Analysis and Domain-Adapted Code Models." *37th IEEE International Symposium on Software Reliability Engineering (ISSRE 2026) Doctoral Symposium*. Accepted. [Conference Program]

Manuscripts Under Review

U1. **M. T. A. Tashfeen**, Z. Shan, X. Wang, R. Bagai, M. Ul Hassan. "Side-Channel Attacks and Defenses in Software-Defined Networks: A Comprehensive Survey." Submitted to *ACM Computing Surveys*. Under review.

Manuscripts in Preparation

M1. **M. T. A. Tashfeen**, A. S. Rouniyar, M. F. Shoaib, H. T. U. Pham, Z. Shan. "LeakScope: Lifecycle-Aware Static Detection of Memory Retention Patterns in Android." Manuscript in preparation for submission to *MobiSys 2027*. Lead author.

M2. **M. T. A. Tashfeen**, A. Sadat, Z. Shan. "An Empirical Investigation of Open-Source LLMs for Android Anti-Pattern Detection via Context-Aware Fine-Tuning." Manuscript in preparation. Lead author.

TEACHING EXPERIENCE

Graduate Teaching Assistant Jan. 2026 – May 2026

Wichita State University, School of Computing

- **CS 721: Advanced Algorithms and Analysis** (graduate). Supported instruction in algorithm design, asymptotic complexity, divide-and-conquer, dynamic programming, graph algorithms, and NP-completeness; evaluated coursework and examinations.
- **CS 211: Introduction to Programming** (undergraduate). Led two weekly C++ lab sessions covering control flow, functions, data structures, modular design, and object-oriented programming; supported grading and student communication.
- **Guest instruction, CS 211** (Spring 2026). Delivered lectures on cross-platform C++ development, installation, and deployment across Windows, macOS, and Linux.

TEACHING AREAS

Foundational computing: introductory programming (C++, Python, Java), data structures and algorithms, and software engineering.
Specialized courses and seminars: computer security, Android application development and mobile security, static program analysis, and AI for software engineering.

STUDENT MENTORSHIP

Research Mentor Spring 2026 – Present

Wichita State University, Software Analysis and Intelligence Laboratory

- Mentored one undergraduate student researcher and one junior Ph.D. student on static program analysis, empirical software engineering methods, and evaluation workflows.
- Supervised defect labeling, code inspection, and inter-rater quality control for Android lifecycle benchmarks; supported student co-authorship on the **LeakScope** manuscript in preparation for *MobiSys 2027*.

RELEVANT INDUSTRY EXPERIENCE

Senior Consultant, Technology Risk Mar. 2023 – June 2023

Ernst & Young Ford Rhodes

Islamabad, Pakistan

- Led cybersecurity audits for Pakistan Telecommunication Company Ltd. (PTCL) and Ufone, assessing data centers, network security, and SOC operations.
- Evaluated security controls and Zero Trust principles; prepared executive audit observations and prioritized remediation roadmaps connecting weaknesses to operational risk.

Information Systems Auditor Nov. 2020 – Mar. 2023

The Bank of Punjab

Lahore, Pakistan

- Evaluated 100+ banking applications and audited access control, change management, incident response readiness, and application security under State Bank of Pakistan requirements and PCI DSS.
- Prepared quarterly Information Security Assurance reports for the Board of Governors, including risk heat maps and remediation timelines.

Executive Engineer Jan. 2020 – Nov. 2020

Iron Bridge Systems

Lahore, Pakistan

- Deployed and configured enterprise security infrastructure including firewalls, SIEM, WAF, and endpoint protection for client environments.
- Validated client-facing security controls for monitoring, prevention, and incident response readiness across multiple engagements.

PROFESSIONAL SERVICE AND MEMBERSHIPS

- **Peer Reviewer**, *IEEE Communications Standards Magazine*, 2026 – completed review of one manuscript. [Public Researcher Profile]
- Member, Institute of Electrical and Electronics Engineers (IEEE). [Membership Certificate] [Graduate Student Certificate]
- Volunteer, IEEE Region 5 Conference 2025, Wichita State University, March 2025.
- Treasurer, Pakistani Student Association, Wichita State University, 2023–2025.
- Social Media Head, IEEE Student Branch, FAST-NUCES Peshawar Campus.

HONORS, AWARDS, AND FUNDING

Research Awards

- **Award for Excellence in Research & Innovation**, AIEYS Excellence Recognition Award 2026, AI-Explain You Science, September 30, 2026. [Certificate]
- **Research Excellence Award – Excellence in Research and Innovation**, International Conference on Artificial Intelligence, Cybersecurity, Multimodal Robotics and Drones (ACMRD 2026) & 10th International CoSiM Conference, Uelzen and Berlin, Germany, September 2026. [Certificate]
- **Young Researcher Award**, Oct. 2025 – 3rd International Conference on Emerging Trends and Innovation (ICETI 2025). [Certificate]
- **Research Excellence Award**, Oct. 2025 – 3rd International Conference on Emerging Trends and Innovation (ICETI 2025). [Certificate]

Fellowships and Travel Funding

- **Jayne and Glenn Milburn Fellowship**, 2026–2027 – Wichita State University Graduate School. Awarded a $400 graduate fellowship based on academic eligibility and financial need. [Award Notification]
- **ISSRE 2026 Travel Funding**, Wichita State University Student Government Association, September 2026. Approved allocation of $1,500, subject to reimbursement requirements. [Funding Approval]
- **Student Travel Grant**, Oct. 2024 – 17th Central Area Networking and Security Workshop (CANSec 2024). Awarded travel support to present research on SDN side-channel vulnerabilities at the University of Oklahoma, Norman, Oklahoma. [Grant Document]

TALKS AND PRESENTATIONS

Invited Keynote Addresses

K1. **"Bridging Program Analysis and Large Language Models for Mobile App Security and Reliability"** (September 5–12, 2026). Keynote Address, *International Conference on Artificial Intelligence, Cyber Security, Multimodal Robotics, and Drones (ACMRD 2026)*, Uelzen & Berlin, Germany (Online). [Certificate] [Slides]

Research Presentations and Defense Talks

P1. **"Toward Reliable Detection of Android Lifecycle Violations with Static Analysis and Domain-Adapted Code Models"** (October 2026). Doctoral Symposium presentation, 37th IEEE International Symposium on Software Reliability Engineering (ISSRE 2026), Limassol, Cyprus. [Conference Program] [Slides]

P2. **"LeakScope: A Research Artifact for Android Lifecycle Violations"** (October 2026). Tool pitch presentation, ISSRE 2026, Limassol, Cyprus. [Tool Pitch Slides]

P3. **"Toward Reliable Detection of Android Lifecycle Violations with Static Analysis and Domain-Adapted Code Models"** (October 2026). Poster presentation, ISSRE 2026, Limassol, Cyprus. [Poster]

P4. **"Automated Detection of Android Lifecycle Anti-Patterns: From Static Analysis to Fine-Tuned Large Language Models"** (May 11, 2026). Ph.D. Dissertation Proposal Defense, School of Computing, Wichita State University. [Slides] [Report]

P5. **Three Minute Thesis (3MT) Competition** (April 25, 2026). Participant, Wichita State University Graduate School. Presented doctoral research to a general audience in a three-minute research presentation. [Slide]

P6. **Ph.D. Qualifying Examination** (October 2025). Electrical Engineering and Computer Science, Wichita State University. [Slides] [Report]

P7. **"Software-Based Side-Channel Attacks in SDNs"** (October 2024). Oral presentation, Technical Session #1, 17th Central Area Networking and Security Workshop (CANSec 2024), University of Oklahoma, Norman, Oklahoma. Authors: **M. T. A. Tashfeen**, Z. Shan. [Slides]

P8. **"Timing Side-Channel Attacks and Defenses for Login Authentication"** (February 2024). Technical workshop/demo, WuLUG. Demonstrated timing side-channel risk in password-checking logic and presented mitigation code for constant-time comparison and secure authentication handling. [Slides] [Demo Script]

P9. **"Software-Based Side-Channel Attacks"** (November 2023). Poster presentation, College of Engineering Research Day, Wichita State University, John Bardo Center. Authors: **M. T. A. Tashfeen**, Z. Shan. [Poster]

CERTIFICATIONS

- EC-Council Certified Ethical Hacker (CEHv11), Credential ID: ECC9765324108.
- $(ISC)^2$ Certified in Cybersecurity, Credential ID: 914385.

TECHNICAL SKILLS

Programming	Python, Java, Bash, C/C++, SQL, LaTeX.
Program Analysis	Soot framework, Jimple IR, bytecode-level instrumentation, Android framework/lifecycle modeling, Android Lint, SpotBugs.
ML / LLMs	PyTorch, LoRA fine-tuning, Hugging Face Transformers, fine-tuning of StarCoder2, Llama-3, and CodeLlama; GPT-4o evaluation.
Security	Timing side-channel exploits/mitigations, enterprise security controls, firewalls, SIEM, WAF.
Computing	NSF ACCESS / Expanse HPC, Slurm scheduler, GPU cluster computing, Linux, Git/GitHub, Docker, reproducible workflows.
Spoken Languages	English and Urdu.