SANA HABIB

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Professional Summary

I am a Security-Privacy Researcher and Computer Science PhD student with 2+ years of industry experience and 4+ years of research expertise. I create open-source tools and techniques to tackle real-world challenges in network and Android security, focusing on identifying and addressing security and privacy issues to promote digital freedom and human rights. I am also passionate about teaching.

Education

Arizona State University (ASU) *Tempe, Arizona, United States*
PHD IN COMPUTER SCIENCE Fall 2025 (Expected)
Advisor: Jedidiah R. Crandall.

National University of Sciences and Technology (NUST) *Islamabad, Pakistan*
MASTER'S IN ELECTRICAL ENGINEERING Spring 2017
Advisor: Syed Ali Hassan.
Dissertation: "Novel Insights for Smart Cell Search in Millimeter Wave Cellular Networks."

National University of Sciences and Technology (NUST) *Rawalpindi, Pakistan*
BACHELOR'S IN ELECTRICAL ENGINEERING Fall 2011
Advisor: Shoab Ahmed Khan.
Undergraduate Project: "Network Management System for Frequency Hopped Tactical Radios."

Research Experience

Biodesign Center for Biocomputation, Security, and Society, ASU *Tempe, Arizona, United States*
Reverse Engineer Local Android Apps, GRADUATE STUDENT RESEARCHER Jan 2022 - Present
- Reverse engineering local Pakistani Android apps for personal data leakage, code-injection vulnerabilities, and insecure network updates to understand how they can compromise the benefits of VPN.

Security Engineering for Future Computing (SEFCOM) Lab, ASU *Tempe, Arizona, United States*
ODIN, GRADUATE SERVICES ASSISTANT Aug 2020 – Present
- Developed an SDN vulnerability-resilience rating framework, Odin, and used it to evaluate the strength, robustness, cost, and prominence of 20+ real-world SDN attacks and defenses.

EIRENE, GRADUATE STUDENT RESEARCHER Aug 2018 – Nov 2022
- Developed an Authentication, Authorization, Accountability, and Conflict Handling (AAAC) Java application, Eirene, on OpenDayLight controller; tested app performance using 50k+ attack rules.

Information Processing and Technology (IPT) Lab, NUST *Islamabad, Pakistan*
MILLIMETER WAVE CELL SEARCH, GRADUATE STUDENT RESEARCHER Oct 2016 - Apr 2017
- Designed a hybrid algorithm for cell search for millimeter wave cellular networks with a performance lying midway between exhaustive and iterative algorithms.

Cognitive Radio Networks (Cognet) Lab, NUST *Islamabad, Pakistan*
TRANSPORT-LAYER MULTIPATH, GRADUATE STUDENT RESEARCHER Jun 2015 - Sep 2016
- Performed a comparative study of multipath transport-layer protocols.

Teaching Experience

TEACHING ASSISTANT
- CSE 548: "Advanced Computer Network Security" Spring 2025
- CSE 355: "Introduction to Theoretical Computer Science" Spring 2025, Fall 2023, Spring 2023
- CSE 468: "Computer Network Security" Fall 2024, Fall 2023
- CSE 536: "Advanced Operating Systems" Spring 2024
- CSE 180: "Computer Literacy" Summer 2023

Industry Experience

Center for Advanced Research in Engineering (CARE) *Islamabad, Pakistan*
REGISTER TRANSFER LEVEL DEVELOPER/RESEARCH ASSOCIATE Dec 2011 - Sep 2014

- Collaborated with multiple teams including Digital Signal Processing team, Field Programmable Gate Arrays (FPGA) team, and Radio Frequency team on Software Defined Radio.
- Developed, implemented, tested, and verified algorithms on FPGA.
- Maintained internal technical documents, wrote two patents, and coordinated with patent agents.

Skills

- **Languages**: Java, C, C++, Python, Verilog, HTML, CSS, Shell code.
- **Tools**: Android Studio, Anaconda, adb shell, ChipScope Pro, Docker, Drozer, Eclispe, Frida, gdb, Genymotion, Ghidra, Github, JADX, LaTeX, Mininet, Virtual Box, OpenDayLight, Spring Model View Controller, Masm, MATLAB, Mobile Security Framework (Mob SF), Model Sim, MPLab, MultiSim, NS2, Proteus, PSpice, Xilinx, Frida.
- **Notable Courses**: Advanced Computer and Network Security, Software Security, Applied Cryptography, Mobile Computing, Foundations of Algorithms, Natural Language Processing, Data Structures.

Publications

- **[Workshop]** Habib, Sana, Mohammad Taha Khan, and Jedidiah R. Crandall. "Examining Leading Pakistani Mobile Apps." In Free and Open Communication on the Internet 2025 (1), pp. 24 – 41. 2025
- **[Workshop]** Habib, Sana, Tiffany Bao, Yan Shoshitaishvili, and Adam Doupé. "Mitigating Threats Emerging from the Interaction between SDN Apps and SDN (Configuration) Datastore." In Proceedings of the 2022 on Cloud Computing Security Workshop, pp. 23-39. 2022. (Acceptance Rate: 5/8, Research Impact Score: 0.7)
- **[Conference]** S. Habib, S. A. Hassan, A. A. Nasir, H. Mehrpouyan, "Millimeter Wave Cell Search for Initial Access: Analysis, Design, and Implementation", 13th International Wireless Communications & Mobile Computing Conference (IWCMC), pages 922-927, June 2017. (Acceptance Rate: 36%)
- **[Journal]** S. Habib, J. Qadir, A. Ali, D. Habib, M. Li, A. Sathiaseelan. The Past, Present, and Future of Transport-Layer Multipath. Journal of Network and Computer Applications, 75, pages 236-258, Nov 2016. (Research Impact Score: 4.59)

Honors & Awards

- Awarded HIVE Fellowship by Center for Digital Resilience (Aug 2024 – May 2025).
- Awarded Information Controls Fellowship from the Open Technology Fund (Jan 2024 – Dec 2024).
- Nominated for the 2022 Google Ph.D. Fellowship Program (Sept 2022).
- Awarded GPSA Outstanding Research Award (Apr 2022).
- Awarded Fulbright Scholarship (Aug 2017 – May 2022).
- Awarded Cyber Security Fellowship (Aug 2019 – Dec 2020).
- Congratulatory Letters from ASU President (Michael M. Crow) (Aug 2019) and the White House (Aug 2017).
- Research Award by National University of Sciences and Technology (NUST), Islamabad, Pakistan (Nov 2016).
- Awarded Grace Hopper Conference (GHC) Scholarship (Oct 2014); Travel Grant for Poster Presentation by Korean Women in Science and Engineering (KWSE) (Aug 2014); UNESCO Travel Grant (Nov 2013).
- Awarded Patent Filling Grant of USD 6,000 (Nov 2012), Application US13/676,705, by Higher Education Commission (HEC), Pakistan.

Service

- Served as a student volunteer for 7+ years (2007 to 2014, in parts) for International Network of Women Engineers and Scientists (INWES), and attended the regional symposiums held in Seoul, South Korea (2014); Nairobi, Kenya (2013); Busan, South Korean (2009); Wroclaw, Poland (2007).