Mohammad Ishtiaq Ashiq Khan

(540) 449-8267 iashiq5@vt.edu Blacksburg, VA Homepage LinkedIn GitHub Google Scholar

Education

Blacksburg, VA **Virginia Tech** **Jan 2021 - Dec 2025 (Expected)**

- Ph.D. in Computer Science and Applications

Blacksburg, VA **Virginia Tech** **Jan 2021 - Dec 2023**

- M.Sc. in Computer Science and Applications, CGPA: 3.88

Dhaka, Bangladesh **BUET** **Jul 2014 - Oct 2018**

- B.Sc. in Computer Science at **Bangladesh University of Engineering and Technology (BUET)**, CGPA: 3.83

Experience

Software Engineer Intern **Meta Platforms, Inc.** **May 2025 - Aug 2025**

- Deprioritize a few cross-functional heavy network calls and CPU-intensive jobs from the critical path of Meta's In-App Browser leading to a 0.3% reduction in browser page load time

Graduate Research Assistant **Virginia Tech** **Jan 2021 - Present**

- Design scalable and automated measurement framework to crawl, and store longitudinal data
- Analyze big data to identify misconfigurations and empirically explore vulnerabilities in network protocols
- Design remediation pipeline to resolve protocol misconfigurations in an automated manner
- Stack: Apache Spark, MongoDB, PostgreSQL, Node.js, Docker, Django Rest, Redis, AWS, etc.

Highlights:

- Identified a couple of DoS vulnerabilities in 3 major email providers and a popular email authentication software
- Published 8 peer-reviewed conference papers (4 first-authored) in top-tier measurement and security conferences like USENIX Security, IMC, and PAM.

Software Engineer Intern **Meta Platforms, Inc.** **May 2024 - Aug 2024**

- Developed a custom plugin in Flipper for Meta's In-App Browser development and debugging leading to a 10% decrease in development time
- Stack: Android (Kotlin/Java), React (TypeScript), Buck, etc.

Lecturer **United International University** **Jul 2019 - Dec 2020**

- Taught Network Security, Data Structure, Object-Oriented Programming, etc. undergraduate courses.

Full Stack Software Engineer **InfoSapex Limited** **Nov 2018 - Jul 2019**

- Successfully released a Procurement Management System in production with over 50% contribution.
- Served as a technical point of contact with clients and carried out requirement analysis.
- Significantly reduced server provisioning time by automating configurations with Puppet and recovery time by setting up monitoring service with Munin and Nagios.
- Stack: Django Rest, Node.js, jQuery, HTML/CSS, Bootstrap, PostgreSQL, Celery, etc.

Publications

- *Unraveling DNSSEC Errors at Scale: An Automated DNSSEC Error Resolution Framework using Insights from DNSViz Logs* in **Internet Measurement Conference 2025**.
  - *Authors:* **Md. Ishtiaq Ashiq**, Olivier Hureau, Casey Deccio, and Taejoong Chung.
  - Conducted a longitudinal, data-driven taxonomy of real-world DNSSEC failures leveraging DNSViz scans.
  - Proposed a semi-automated DNSSEC error resolution framework, **DFixer** that can fix 99.99% of observed misconfigurations.

- *Unraveling the Complexities of MTA-STS Deployment and Management in Securing Email* in **Internet Measurement Conference 2025**.
  - *Authors:* **Md. Ishtiaq Ashiq**, Tobias Fiebig, and Taejoong Chung.
  - Conducted a comprehensive and longitudinal analysis of the MTA-STS protocol in email transport security ecosystem. Identified 20K misconfigured domains with 3.2% of these prone to potential email delivery failure.
- *SPF Beyond the Standard: Management and Operational Challenges in Practice and Practical Recommendations* in **USENIX Security Symposium 2024**.
  - *Authors:* **Md. Ishtiaq Ashiq**, Weitong Li, Tobias Fiebig, and Taejoong Chung.
  - Analyzed the server-side misconfigurations of SPF protocol in email authentication ecosystem.
  - Proposed a DoS attack scheme to prevent victims from temporarily receiving emails.
- *RoVista: Measuring and Analyzing the Route Origin Validation in RPKI* in **Internet Measurement Conference 2023**.
  - *Authors:* Weitong Li, Zhexiao Lin, **Md. Ishtiaq Ashiq**, Emile Aben, Romain Fontugne, Amreesh Phokeer, Taejoong Chung.
  - Proposed a network measurement framework, RoVista, to determine the Route Origin Validation (ROV) status at scale leveraging IP-ID side channel.
- *You've Got Report: Measurement and Security Implications of DMARC Reporting* in **USENIX Security Symposium 2023**.
  - *Authors:* **Md. Ishtiaq Ashiq**, Weitong Li, Tobias Fiebig, and Taejoong Chung.
  - Analyzed the DMARC Reporting landscape in email authentication longitudinally and empirically.
  - Proposed a couple of DoS vulnerabilities in 3 major email providers with amplification factor over 1400x leveraging DMARC and TLS-RPT reporting.
- *Measuring TTL Violation of DNS Resolvers At Scale* in **Passive and Active Measurement 2023**.
  - *Authors:* Protick Bhowmick, **Md. Ishtiaq Ashiq**, Casey Deccio, and Taejoong Chung.
  - Analyzed TTL violation of resolvers in DNSSEC.
- *Under the Hood of DANE Mismanagement in SMTP* in **USENIX Security Symposium 2022**.
  - *Authors:* Hyeonmin Lee, **Md. Ishtiaq Ashiq**, Moritz Muller, Roland van Rijswijk-Deij, Taekyoung Kwon, and Taejoong Chung.
  - Automated the DANE key rollover scheme in a popular open-source email provider to counter key management challenges.
- *Measurement and Analysis of Automated Certificate Reissuance* in **Passive and Active Measurement 2021**.
  - *Authors:* Olamide Omolola, Richard Roberts, **Md. Ishtiaq Ashiq**, Taejoong Chung, Dave Levin, and Alan Mislove.
  - Examined SSL certificates issued by leading CAs to identify certificate misissuances based on CAA records.
- *Domain Flux based DGA Botnet Detection Using Feedforward Neural Network* in **Military Communications Conference 2019**.
  - *Authors:* **Md. Ishtiaq Ashiq**, Protick Bhowmick, Md. Shohrab Hossain, and Husnu S. Norman.

Selected Projects

- **Revisiting the NXNS Attack** (2022). Developed a scalable technique to measure patches for the attack in local resolvers leveraging a proxy network, [details].
- **Transferability of Adversarial Training in Text Domain** (2021). Conducted a study to check transferability of adversarial training across popular adversarial frameworks. Framework: PyTorch, [Link].
- **DNSSEC Debugger** (2021). Analyzed historical DNSViz data to understand the challenges for DNS administrators while deploying and managing DNSSEC. Presented in **36th DNS-OARC Workshop**, [Link].
- **Robustness Analysis of a Web Honeypot** (2021). Demonstrated common web vulnerabilities in a popular web honeypot framework (SNARE-TANNER), [details].

Languages and Technologies

Languages Python, Java, C++, C, JavaScript, Go, Kotlin, TypeScript, HTML, CSS, Assembly (x86), R
Frameworks and Technologies Django Rest, FastAPI, Tensorflow, Apache Spark, PyTorch, Node.js, Android, React
DBMS Oracle SQL, PostgreSQL, MongoDB, Redis, Elasticsearch
VCS Git, Sapling
Tools Docker, Vagrant, Hugo, Gulp, Buck, Celery, Grafana, AWS Services (S3, EC2), Perfetto, etc.

Additional Experience and Awards

- **Reviewer, Artifact Evaluation Committee** USENIX Security Symposium 2025, Network and Distributed System Security Symposium (NDSS) 2026
- **Instructor, Virginia Tech:** Taught Intermediate Software Design course during Summer 2023.
- **Open Source Contributions:** Contributed to 3 open-source projects: Mail-in-a-Box, iRedAPD, and TextAttack.
- Awarded *University Merit List Scholarship*, and *Dean's List Scholarship* during bachelor's.

References

- **Dr. Taejoong Chung**
  Associate Professor, Virginia Tech
  Contact: tijay@vt.edu
- **Dr. Tobias Fiebig**
  Researcher, Max-Planck-Institut für Informatik
  Contact: tfiebig@mpi-inf.mpg.de
- **Dr. Casey Deccio**
  Associate Professor, Brigham Young University
  Contact: casey@byu.edu