

# Mohammad Ishtiaq Ashiq Khan

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## Education

<b>Blacksburg, VA</b>	<b>Virginia Tech</b>	<b>Jan 2021 - Dec 2025 (Expected)</b>
<ul style="list-style-type: none"><li>• Ph.D. in Computer Science and Applications</li></ul>		
<b>Blacksburg, VA</b>	<b>Virginia Tech</b>	<b>Jan 2021 - Dec 2023</b>
<ul style="list-style-type: none"><li>• M.Sc. in Computer Science and Applications, CGPA: 3.88</li></ul>		
<b>Dhaka, Bangladesh</b>	<b>BUET</b>	<b>Jul 2014 - Oct 2018</b>
<ul style="list-style-type: none"><li>• B.Sc. in Computer Science at <b>Bangladesh University of Engineering and Technology (BUET)</b>, CGPA: 3.83</li></ul>		

## Experience

<b>Software Engineer Intern</b>	<b>Meta Platforms, Inc.</b>	<b>May 2025 - Aug 2025</b>
<ul style="list-style-type: none"><li>• 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</li></ul>		
<b>Graduate Research Assistant</b>	<b>Virginia Tech</b>	<b>Jan 2021 - Present</b>
<ul style="list-style-type: none"><li>• Design scalable and automated measurement framework to crawl, and store longitudinal data</li><li>• Analyze big data to identify misconfigurations and empirically explore vulnerabilities in network protocols</li><li>• Design remediation pipeline to resolve protocol misconfigurations in an automated manner</li><li>• Stack: Apache Spark, MongoDB, PostgreSQL, Node.js, Docker, Django Rest, Redis, AWS, etc.</li></ul>		
<b>Highlights:</b>		
<ul style="list-style-type: none"><li>• Identified a couple of DoS vulnerabilities in 3 major email providers and a popular email authentication software</li><li>• Published 8 peer-reviewed conference papers (4 first-authored) in top-tier measurement and security conferences like USENIX Security, IMC, and PAM.</li></ul>		
<b>Software Engineer Intern</b>	<b>Meta Platforms, Inc.</b>	<b>May 2024 - Aug 2024</b>
<ul style="list-style-type: none"><li>• Developed a custom plugin in Flipper for Meta's In-App Browser development and debugging leading to a 10% decrease in development time</li><li>• Stack: Android (Kotlin/Java), React (TypeScript), Buck, etc.</li></ul>		
<b>Lecturer</b>	<b>United International University</b>	<b>Jul 2019 - Dec 2020</b>
<ul style="list-style-type: none"><li>• Taught Network Security, Data Structure, Object-Oriented Programming, etc. undergraduate courses.</li></ul>		
<b>Full Stack Software Engineer</b>	<b>InfoSapex Limited</b>	<b>Nov 2018 - Jul 2019</b>
<ul style="list-style-type: none"><li>• Successfully released a Procurement Management System in production with over 50% contribution.</li><li>• Served as a technical point of contact with clients and carried out requirement analysis.</li><li>• Significantly reduced server provisioning time by automating configurations with Puppet and recovery time by setting up monitoring service with Munin and Nagios.</li><li>• Stack: Django Rest, Node.js, jQuery, HTML/CSS, Bootstrap, PostgreSQL, Celery, etc.</li></ul>		

## Publications

- *Unraveling DNSSEC Errors at Scale: An Automated DNSSEC Error Resolution Framework using Insights from DNSViz Logs* accepted 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

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- **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

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**Languages** Python, Java, C++, C, JavaScript, Go, Kotlin, TypeScript, HTML, CSS, Assembly (x86), R  
**Frameworks and Technologies** Django Rest, 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

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- **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

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- **Dr. Taejoong Chung**  
Associate Professor, Virginia Tech  
Contact: [tijay@vt.edu](mailto:tijay@vt.edu)
- **Dr. Tobias Fiebig**  
Researcher, Max-Planck-Institut für Informatik  
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- **Dr. Casey Deccio**  
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