

# ARKA GHOSH

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## EDUCATION

<b>George Mason University, Fairfax, VA, USA</b> <i>PhD Information Science and Technology</i>	2024 - Present 4.0/4.0 GPA
<b>Digital University Kerala (Formerly IIITM-K), India</b> <i>M.Sc. Computer Science with specialization in Cybersecurity</i>	2022 - 2024 8.44/10 CGPA (2nd in Class)
<b>University of Calcutta, India</b> <i>B.Sc. Computer Science</i>	2019 - 2022 8.71/10 CGPA (5th in class)

## EXPERIENCES

### Internships:

#### · Cybersecurity Field Training Experience, CCI (Sept 2025-Dec 2025)

Leading a project on attack path construction and design flaw detection using CVEs.

Conducting field-oriented cybersecurity research bridging academic innovation with defense applications.

Guiding two undergraduate researchers in experimental development and analysis.

#### · Graduate Research Assistant, George Mason University(June 2025-August 2025)

Developed an AI-powered tutoring agent for ethics training for an undergraduate course.

Applied RAG for context-specific feedback by the agent for the students.

Deployed the AI agent on GMU's internal server, enabling secure and direct access for students.

#### · Graduate Teaching Assistant, George Mason University(Aug 2024-Present)

Assisted in a course that teaches server-side scripting using Node.js with emphasis on secure coding practices.

#### · R&D Intern -Centre for Distributed Computing, Jadavpur University(Feb 2024-July 2024)

Designed and tested Moving Target Defense (MTD) strategies for Software-Defined Networking (SDN), improving resilience against targeted attacks.

#### · R&D Intern -Centre for Digital Transformation and Innovation(Oct 2023-Feb 2024)

Worked on computer vision research, contributing to the development of innovative solutions.

#### · Research Intern -George Mason University(July 2023-Aug 2023)

Conducted novel research on network intrusion detection rule optimization using genetic algorithms under Dr. Massimiliano Albanese, which resulted in a paper in SECRIPT 2024.

#### · Penetration Tester Trainee -Techgyaan Technologies(Dec 2021)

Identified and documented 30+ vulnerabilities in sandbox systems, leading to enhanced mitigation protocols.

#### · Technical Content Writer for DataFlair(July 2021-Sept 2021)

Authored articles on emerging Java technologies, helped increase site traffic by SEO.

### Managerial Roles:

- **Hack-X Cybersecurity Society Founding Member.** Organized CTF competitions, seminars, and other activities related to cybersecurity.
- **Placement Cell DUK core team Member.** Roles include management of various placement activities.

## PUBLICATIONS AND CONFERENCES

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<b>Optimizing IDS Rule Placement via Set Covering with Capacity Constraints</b>	COSE
<i>Computers &amp; Security</i>	2025
<a href="https://doi.org/10.1016/j.cose.2025.104748">https://doi.org/10.1016/j.cose.2025.104748</a>	
<b>Improving the Efficiency of Intrusion Detection Systems by Optimizing Rule Deployment Across Multiple IDSs</b>	SECRYPT
<i>21st International Conference on Security and Cryptography</i>	2024
<a href="http://dx.doi.org/10.5220/0012814500003767">http://dx.doi.org/10.5220/0012814500003767</a>	
<b>Ensemble Learning And its Application in Spam Detection</b>	ICCECE
<i>International Conference on Computer, Electrical &amp; Communication Engineering</i>	2023
<a href="https://ieeexplore.ieee.org/document/10085378">https://ieeexplore.ieee.org/document/10085378</a>	

## SKILLS

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**AI & Data Science:** Machine Learning, Deep Learning, NLP, Ensemble Learning, Neural Networks, GenAI, AI Agents

**Cybersecurity Tools & Techniques:** Intrusion Detection Systems (IDS), Penetration Testing, Vulnerability Assessment, Ethical Hacking, Moving Target Defense, SDN Security, MITRE ATT&CK Framework, Kali Linux Tools

**Programming & Frameworks:** Python, C++, Java, Flask, Node.js, JavaScript, MySQL, GIT, Streamlit, Gradio

**Networking:** Network Troubleshooting, Protocol Debugging, Network Simulation(GNS3), Routing, Switching

**DevOps & Deployment:** Server Deployment, Linux Server Administration, Internal Network Hosting, API Integration, Scripting for Network Monitoring

## ACHIEVEMENTS AND CERTIFICATIONS

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<b>IEEE ComSoc SNTC Student Competition</b>	2025
· Gold Award in the international proposal writing competition, where there were participants from all around the world.	
<b>Outstanding Academic Performance Award</b>	2024
· Awarded for my performance in academics and extracurricular activities.	
<b>CCNAv7.0 from CISCO Academy</b>	2024
<b>Smart India Hackathon Internals, First runner-up</b>	2023
<b>CTF 1.0</b>	2022
· First Runner-up Organized by KSAAC <a href="https://ksaac.duk.ac.in/event_past.php">https://ksaac.duk.ac.in/event_past.php</a>	
<b>Cybersecurity and Ethical Hacking Course</b>	2021
· Cyber Security and Ethical Hacking for Beginners and Advanced from GUVI Geek.	
<b>IIT Madras Certified Python Course</b>	2021
· Completed an in detailed course on python programming under distance learning by IIT Madras.	