

ARKA GHOSH

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EDUCATION

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

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

SKILLS

- 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

- IEEE ComSoc SNTC Student Competition** 2025
- Gold Award in the international proposal writing competition, where there were participants from all around the world.
- Outstanding Academic Performance Award** 2024
- Awarded for my performance in academics and extracurricular activities.
- CCNA v7.0 from CISCO Academy** 2024
- Smart India Hackathon Internals, First runner-up** 2023
- CTF 1.0** 2022
- First Runner-up Organized by KSAAC https://ksaac.duk.ac.in/event_past.php
- Cybersecurity and Ethical Hacking Course** 2021
- Cyber Security and Ethical Hacking for Beginners and Advanced from GUVI Geek.
- IIT Madras Certified Python Course** 2021
- Completed an in detailed course on python programming under distance learning by IIT Madras.