

# Aditya Mitra

Cybersecurity Researcher and Professional

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## Researcher

### Center of Excellence in Artificial Intelligence and Robotics, VIT-AP

February 2022 – Present

- Have extensively researched network and security for Internet of Things (IoT) applications.
- Have researched various aspects of passwordless authentication and secure deployment.
- Have more than 5 publications in highly reputed journals based on research work.

## Co-Founder, CTO

### Digital Fortress Pvt. Ltd. (Student-led startup)

April 2022 – Present

- Innovated and single-handedly developed a backend for a passwordless authentication framework in under 3 days.
- Developed, maintained, and deployed the cloud servers and maintained best security.
- Deployed passwordless authentication at enterprise level.
- Deployed applications on multiple cloud platforms, including Azure, and AWS, in Linux based servers.
- Led a team of 7 developing next gen passwordless authentication systems providing SSO and CSP service.
- Worked with Databases like SQL and Firebase

## Product Development Intern

### Infinite Consultancy B.V.

August 2023 – April 2024

- Created a smart card reader with proprietary features and cryptographic technologies.
- Worked on ISO7816 NFC technology and HID devices to create a proprietary smart card reader. [Project overview](#)
- Reverse engineered certain parts of Microsoft Teams Rooms systems to add multiple features in under 2 months.

## Pentester Intern

### Fresh Digital ([Letter of Recommendation](#))

March 2022 – April 2022

- Performed a security test of client network and identified areas of non-compliance.
- Pentested the production environment to identify risks and suggested strategies to mitigate the same.

## Null Chapter, VIT-AP

### Vice President ([Certificate](#))

December 2022 – August 2023

- Showcased an attack where a spoofed public charger can be used to take control of Android phones.
- Conducted an event on cloud security practices with Microsoft Azure.
- Conducted an event on networking, network security, firewalls, and secure configurations.
- Conducted a session to demonstrate secure passwordless authentication with FIDO2 specification.
- Set challenges for and evaluated 3 Capture the Flag (CTF) events.
- Was awarded the [Best Member](#) for the year 2021-2022.

## Personal Achievements

- Erasmus Mundus Scholar, EMJMD in Applied Cybersecurity (CyberMACS), 2025
- Contributed during the Metaverse demonstration at the "Recent Research Trends and Applications of AI and IoT" FDP at NIT Warangal. ([Letter of Recommendation](#))
- Reported Vulnerability 1721 to FIDO Alliance that affected all FIDO Authenticators with NFC technology, allowing a malware based MITM attack. ([Vulnerability Report](#))
- Reviewed a paper for International Conference on Electrical, Computer and Energy Technologies (IEEE ICECET 2024) ([Certificate](#)).
- Reviewed a paper for the Cyber Security and Applications Journal (Elsevier). ([Certificate](#))
- Reviewed 2 papers for Telecommunication Systems (Springer Nature). ([Certificate](#))
- Mentored in various hackathons like Status Code 1 Hackathon organized by IIIT Kalyani in collaboration with IISER Kolkata, FrostHacks 1.0 Hackathon organized by Academy of Technology, HexaFalls 1.0 organized by JIS University.

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# Aditya Mitra

## Skills & Interests

**Technical:** Java, OOPs, Git, C Language, Python, Cuda, Linux, Networking, IoT, Azure, SQL, FIDO2 Specifications

**Interests:** Open Source, Internet of Things, Passwordless Authentication, Cloud Computing

**Research Interests:** Information security, Cryptography, Networking, Passwordless Authentication, Systems security

## Certifications

- Cisco Certified Cybersecurity Associate (CCNA Cybersecurity)
- Cisco Certified Network Associate (CCNA)
- CompTIA SecurityX (formerly CASP+) Certified
- CompTIA CySA+ Certified
- CompTIA Security+ Certified
- CompTIA Network+ Certified
- Microsoft Certified: Security, Compliance, and Identity Fundamentals
- Microsoft Certified: Azure Fundamentals
- Oracle Certified Associate: Java SE 8 Programmer
- CLA - C Certified Associate Programmer
- Google IT Support Certificate
- Google Cybersecurity Certificate, and more

<https://www.credly.com/users/aditya-mitra.a830b75a/badges>

## Publications

- Mitra, A., & Sethuraman, S. C. (2025). Verifiable Passkey: The Decentralized Authentication Standard (Version 1). arXiv. <https://doi.org/10.48550/ARXIV.2512.21663>
- Mitra, A., & Sethuraman, S. C. (2025). The Qey: Implementation and performance study of post quantum cryptography in FIDO2 (Version 1). arXiv. <https://doi.org/10.48550/ARXIV.2510.21353>
- Mitra, A., Ghosh, A., & VS, D. P. (2025). Blind Eye: Motion and Obstacle Detection Leveraging Wi-Fi. arXiv preprint arXiv:2502.07493. <https://doi.org/10.48550/arXiv.2502.07493>
- Mitra, A., Ghosh, A., Sethuraman, S. C., & S, D. P. V. (2024). Colaboot: A Cloud-based Diskless PC Booting Mechanism (Version 1). arXiv. <https://doi.org/10.48550/ARXIV.2408.17045>
- Mitra, A. and Ghosh, A. (2024) ‘FIDO2: A comprehensive study on passwordless authentication’, International Journal of Engineering Research and Applications, 14(7), pp. 58–63. doi:10.9790/9622-14075863. <https://doi.org/10.9790/9622-14075863>
- Sethuraman, S. C., Mitra, A., Ghosh, A., & Babu, R. T. S. (2024, October). TUSH-Key: Transferable User Secrets on Hardware Key. In *2024 IEEE 30th International Conference on Parallel and Distributed Systems (ICPADS)* (pp. 176-185). IEEE. <https://doi.org/10.1109/ICPADS63350.2024.00032>
- Ghosh, A., Mitra, A., Sethuraman, S. C., & Cherukuri, A. K. (2024). Conceptual Design and Implementation of FIDO2 compatible Smart Card for Decentralized Financial Transaction System. arXiv preprint arXiv:2408.04977. <https://doi.org/10.48550/arXiv.2408.04977>
- Ghosh, A., Mitra, A., Chakkaravarthy, S. S., Priya, V. D., Anitha, S., & Babu, R. T. S. (2024, July). Saila: Human Interface Device (HID) Injection Protection with Smart Phone based Passwordless Security. In *2024 IEEE 44th International Conference on Distributed Computing Systems Workshops (ICDCSW)* (pp. 122-127). IEEE. <https://doi.org/10.1109/ICDCSW63686.2024.00023>
- Cherukuri, A. K., Shaw, R., Ghosh, A., Mitra, A., Chakkaravarthy, S., & Kamalov, F. (2024). Conceptual design and implementation of FIDO2 compatible smart medical card for healthcare information system. International Journal of Critical Computer-Based Systems, 11(1/2). <https://doi.org/10.1504/ijccbs.2024.10064420>
- Ghosh, A., Mitra, A., Saha, A., Sethuraman, S. C., & Subramanian, A. (2024). MERP: Metaverse Extended Reality Portal (Version 1). arXiv. <https://doi.org/10.48550/ARXIV.2402.05592>
- Ujjwal Reddy, K.S., Sibi Chakkaravarthy, S., Gopinath, M., Mitra, A. (2023). A Study on Android Malware Detection Using Machine Learning Algorithms. In: Nandan Mohanty, S., Garcia Diaz, V., Satish Kumar, G.A.E.

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(eds) Intelligent Systems and Machine Learning. ICISML 2022. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 470. Springer, Cham.

[https://doi.org/10.1007/978-3-031-35078-8\\_20](https://doi.org/10.1007/978-3-031-35078-8_20)

- Sethuraman, S. C., Mitra, A., Ghosh, A., Galada, G., & Subramanian, A. (2023). MetaSecure: A Passwordless Authentication for the Metaverse. arXiv. <https://doi.org/10.48550/ARXIV.2301.01770>
- S. C. Sethuraman, A. Mitra, G. Galada, A. Ghosh, and S. Anitha, "Metakey: A Novel and Seamless Passwordless Multifactor Authentication for Metaverse," 2022 IEEE International Symposium on Smart Electronic Systems (iSES), Warangal, India, 2022, pp. 662-664, doi: 10.1109/iSES54909.2022.00148. <https://doi.org/10.1109/iSES54909.2022.00148>
- S. C. Sethuraman, A. Mitra, K. -C. Li, A. Ghosh, M. Gopinath, and N. Sukhija, "Loki: A Physical Security Key Compatible IoT Based Lock for Protecting Physical Assets," in IEEE Access, 2022, doi: 10.1109/ACCESS.2022.3216665. <https://doi.org/10.1109/ACCESS.2022.3216665>
- Mitra, A., S. K., Chakkavarthy, S., Cruz, M. V., Rajan, G. P., & Ganesh, S. S. (2022). A Potable Water Location Tagging System for Victims of Natural Calamities. In Environmental Challenges (p. 100617). Elsevier BV. <https://doi.org/10.1016/j.envc.2022.100617>

## Best Projects, Hackathons and Competitions

### Mariana's Qubit (Ongoing)

- Open-source anonymous, decentralized, internet stack.
- Redefines the entire OSI network model with privacy as priority.
- Seamless support for most devices.
- Developed for censorship resistance and surveillance resistance.
- <https://adityamitra5102.github.io/Marianas-Qubit>

### PQC FIDO2 Security Key

- The first study to develop a fully functional physical security key with post quantum cryptography.
- Developed a prototype PQC Physical Security Key that is fully compliant with Windows Hello and Apple.
- Developed on a Raspberry Pi, tested on most major RPs including Google Accounts/
- <https://github.com/AdityaMitra5102/RPi-PQC-FIDO-Key-Pin-support-ecdh>

### NetLM -LLM Based Cisco Ios Network Configuration Tool

- Tight integration of Llama 3 with Cisco Ios devices for easy configuration.
- Usage of internet connected bot for remote communication
- Ideal for immediate incident response and management
- Related Skills: Networking, Cisco Ios, LLMs, AI, Telegram API, Python
- <https://github.com/AdityaMitra5102/NetLM>

### FIDO Developer Challenge India, 2022 – Top 3 [Certificate](#), INEX 2022 – Silver Award [Certificate](#)

### MAuthN

- Implemented passwordless authentication for low end devices and remote servers.
- Evaluated with NodeMCU with very less computing power.
- Related Skills: Flask, FIDO2, Python, Backend, Cloud computing, Linux, IoT

### Smart India Hackathon, 2022 – Winner [Certificate](#)

### MediaRF – Transmission of multimedia files securely over police radios

- Encoding files to be transmitted over walkie-talkies / any audio communication device.
- Implemented robust compression algorithms for multimedia files, encryption of the files and encoding using various PSK, FSK and QAM algorithms.
- Related Skills: Cryptography, Python, Modulation-demodulation, file compression
- <https://adityamitra5102.github.io/blog/transmission.html>

### ION<athon> 1.0 – Top 10 finalists [Certificate](#)

### PP2PP – Painless Peer to Peer Payments

- Secure payments gateway, incorporating additional features like nearby payments and advanced security standards.
- Leveraged physical security, along with best cloud security practices for security.

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- Related Skills: Azure, Python, FIDO2 Specifications, Web development
- <https://adityamitra5102.github.io/blog/pp2pp.html>

## Microsoft Imagine Cup, 2022 – India Runner-up [Certificate](#)

### Reverse Proxy

- Seamless student attendance platform, eliminating malpractices like Proxy attendance.
- Leveraged public key cryptosystem (RSA) and device attestation with FIDO2 Specifications.
- Related Skills: Azure, Python, FIDO2 Specifications, Web development
- <https://adityamitra5102.github.io/blog/rproxy.html>

### Loki (Published in IEEE Access)

- FIDO2 Compliant physical lock for protecting physical assets.
- Leveraged public key cryptosystem (RSA) and best cloud security practices.
- Probably the first ever physical lock to work seamlessly and well as with high security and easy access control.
- Related Skills: Azure, Python, FIDO2 Specifications, Internet of Things, Cryptography.
- <https://adityamitra5102.github.io/blog/loki.html>

## Hackerearth Hack to Enable, 2021 - 6<sup>th</sup> Position.

### Cam Braille

- Project aimed at enabling visually impaired persons to read and highlight text for future reference.
- A fingertip camera was implemented to enable visually impaired people to read text with their finger followed by a text to speech output through connected headphones.
- Text highlight feature stored the highlighted text to cloud for future reference.
- Related Skills: Azure, Python, Raspberry Pi, IoT, Image Processing, Text recognition.
- <https://adityamitra5102.github.io/blog/cambraille>

## ACM ICPC 2021 – Regionalist (Asia Amritapuri Region) [Certificate](#)

### Education

#### KADIR HAS UNIVERSITY (CyberMACS Erasmus Mundus Joint Masters)

M. Sc in Cybersecurity

Istanbul, Turkey

2025 - Present

#### VIT-AP UNIVERSITY

B. Tech in Computer Science and Engineering with specialization in Robotics (CGPA: 8.32)

Andhra Pradesh, India

2020 - 2024

