Aditya Mitra
Cybersecurity Researcher and Professional

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Experience

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 the 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

- 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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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). 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://www.ijera.com/papers/vol14no7/14075863.pdf
- 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. (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

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- Sethuraman, S. C., Mitra, A., Ghosh, A., Galada, G., & Subramanian, A. (2023). MetaSecure: A Passwordless Authentication for the Metaverse (Version 1). 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., Chakkaravarthy, 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

Connet
- Open-source tool for staying anonymous on networks.
- Rapidly changes static IP address on the same address space offered by the DHCP server.
- Rapidly changes physical or MAC address.
- Uses an open-source VPN to change public IP address.
- https://adityamitra5102.github.io/blog/connet.html

TutorGPT
- Leveraged open-source library PrivateGPT to parse academic materials.
- Developed a pipeline with Flask as a webserver and langchain, using GPT3.5.
- Materials supplied by a faculty can be uploaded and follow up questions for doubt clearing can be asked.
- https://adityamitra5102.github.io/blog/tutorgpt.html

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

Microsoft Imagine Cup, 2022 – India Runner-up Certificate

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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 - 6th 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

Education

KADIR HAS UNIVERSITY (CyberMACS EMJM) Istanbul, Turkey
M. Sc in Cybersecurity 2025 - Present

VIT-AP UNIVERSITY Andhra Pradesh, India
B. Tech in Computer Science and Engineering with specialization in Robotics (CGPA: 8.32) 2020 - 2024