

Arnab Mukherjee

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EDUCATION

Master of Technology - Computer Science & Engineering <i>Indian Institute of Technology Patna</i>	Jul 2022 – present Patna, India
Bachelor of Technology - Computer Science & Engineering (CGPA 9.08/10) <i>Maulana Abul Kalam Azad University of Technology</i>	Jul 2018 – Jun 2022 Kolkata, India
Higher Secondary Education (82.6%) <i>Kendriya Vidyalaya Ballygunge</i>	May 2015 – Mar 2018 Kolkata, India
Secondary Education (CGPA 9.2) <i>Kendriya Vidyalaya Ballygunge</i>	Apr 2013 – Mar 2015 Kolkata, India

SKILLS






• HTML5 / CSS3	• JavaScript	• Node.JS	• React JS
• Python	• GoLang	• PyTorch	• Ethereum
• Hyperledger Fabric	• Solidity	• MongoDB	• PostgreSQL / MySQL

PROFESSIONAL EXPERIENCE

Junior Research Fellow <i>Ministry of Electronics and Information Technology, Government of India</i> <ul style="list-style-type: none">• Develop prototype implementation of the NDHB architecture.• Research on ways to protect and verify the integrity of information stored in NDHB.• Find possible use cases of blockchain in federated information systems.• Research on multimodal information summarization using AI.	Jul 2022 – present Patna, India
Research Intern <i>Indian Institute of Technology Patna</i> <ul style="list-style-type: none">• Researched the applications of blockchain technology in various industry sectors.• Tested the application of machine learning to detect vulnerabilities in smart contracts.• Implemented a federated learning architecture for Deep Q Learning agents.• Designed and developed three smart city platforms based on Hyperledger Fabric and Ethereum.• Implemented REST APIs using Express and Node.js.• Drafted frontends for the projects using React JS.	May 2020 – Dec 2021 Patna, India
Full-Stack Web Development Intern <i>Insolva Solutions Inc.</i> <ul style="list-style-type: none">• Designed and Developed a company website for an NGO using the LAMP stack.• Implemented a blogging website, similar to WordPress for a client using the MERN stack.	Jan 2020 – Apr 2020 Kolkata, India

PUBLICATIONS

FedRLChain: Secure Federated Deep Reinforcement Learning with Blockchain  <i>IEEE Transactions on Services Computing, IEEE Press.</i> Sujit Chowdhury, Arnab Mukherjee, Raju Halder	Jul 2023
HealthChain: A Blockchain-aided Federated Healthcare Management System  <i>2023 IEEE International Conference on Blockchain and Cryptocurrency (ICBC '23), IEEE Press.</i> Arnab Mukherjee, Raju Halder, Joydeep Chandra, Shailesh Shrivastava	May 2023
Making Robotic Swarms Trustful: A Blockchain-Based Perspective  <i>Journal of Computing and Information Science in Engineering (JCISE), ASME</i> Atul Thakur, Swagatika Sahoo, Arnab Mukherjee, Raju Halder	Apr 2023
SmartMixModel: Machine Learning-based Vulnerability Detection of Solidity Smart Contracts  <i>5th IEEE International Conference on Blockchain (Blockchain 2022), IEEE Press.</i> Supriya Shakya, Arnab Mukherjee, Raju Halder, Abyayananda Maiti, Amrita Chaturvedi.	Aug 2022

A Blockchain-Based Integrated and Interconnected Hybrid Platform for Smart City Ecosystem  <i>Peer-to-Peer Networking and Applications (PPNA), Springer Nature.</i> Arnab Mukherjee, Swagatika Sahoo, Raju Halder.	May 2022
Blockchain-Enabled Emergency Detection and Response in Mobile Healthcare System  <i>IEEE International Conference on Blockchain and Cryptocurrency (ICBC '22), IEEE Press.</i> Suryakanta Panda, Arnab Mukherjee, Raju Halder, Samrat Mondal.	May 2022
A Unified Blockchain-based Platform for Global e-waste Management  <i>International Journal of Web Information Systems (IJWIS), Volume 17(5): 449-479. Emerald Publishing.</i> Swagatika Sahoo, Arnab Mukherjee, Raju Halder.	Jun 2021
An Integrated Platform for Vehicle-Related Services and Records Management using Blockchain Technology  <i>13th Asian Conference on Intelligent Information and Database Systems (ACIIDS '21), Springer CCIS 1371.</i> Arnab Mukherjee, Raju Halder.	Apr 2021
PoliceChain: Blockchain-Based Smart Policing System for Smart Cities  <i>13th International Conference on Security of Information and Networks (SIN '20), ACM Press.</i> Arnab Mukherjee, Raju Halder.	Nov 2020

PROJECTS


SoliCheck: Web App based on Django for Soli-SWC

github.com/mukherjeeearnab/soli-check

- A vulnerability detection model based on the soli-swc project.
- Built using the Django Web Framework, providing a web interface for using the Soli-SWC tool.

Template Portfolio Website for Researchers

github.com/mukherjeeearnab/researcher-portfolio

- Designed and implemented a template portfolio website on React JS, for Researchers or University Professors.
- Demo available at <https://mukherjeeearnab.github.io/researcher-portfolio> 

GoTPE

github.com/mukherjeeearnab/gotpe


- Implemented a Go package for Threshold Predicate Encryption (TPE).
- TPE is a variant of functional encryption, based on the works of Khai Zhou et. al. in IEEE TIFS Vol.: 13.


Vulnerability Detection of Solidity Smart Contracts

github.com/mukherjeeearnab/soli-swc

- Implemented a Deep Learning model to detect vulnerabilities in Solidity smart contracts.
- The LSTM model, implemented on Tensorflow, achieved an F-1 score of 97.85% during the tests.

INTERESTS

Playing the Guitar and Piano, and arranging scores for them.  (My arranged scores can be found on MuseScore @quinn1601)

Landscape and Bird Photography  (My photography portfolio can be found my Instagram account @arnabm99)

Repairing Computers and Electronics (Along with computers and electronics, I also love fixing cars)