Arnab Mukherjee

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EDUCATION

Bachelor of Technology - Computer Science & Engineering (GPA 8.8/10) Jul 2018 – Jun 2022
Maulana Abul Kalam Azad University of Technology Kolkata, India

Higher Secondary Education (82.6%) May 2015 – Mar 2018
Kendriya Vidyalaya Ballygunge Kolkata, India

Secondary Education (CGPA 9.2) Apr 2013 – Mar 2015
Kendriya Vidyalaya Ballygunge Kolkata, India

SKILLS

- HTML5 / CSS3
- JavaScript
- Node.JS
- React JS
- Python
- Solidity
- MongoDB
- PostgreSQL

PROFESSIONAL EXPERIENCE

Research Intern May 2020 – Dec 2021
Indian Institute of Technology Patna Patna, India
- 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.

Full-Stack Web Development Intern Jan 2020 – Apr 2020
Insolva Solutions Inc. Kolkata, India
- 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.

PROJECTS

SoliCheck: Web App based on Django for Soli-SWC
https://github.com/mukherjeearnab/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/mukherjeearnab/researcher-portfolio
- Designed and implemented a template portfolio website on React JS, for Researchers or University Professors.
- Demo available at *https://mukherjeearnab.github.io/researcher-portfolio*

Distributed Deep Q Learning
github.com/mukherjeearnab/distributed-deep-qnet
- Implemented a distributed architecture for Deep Q Learning, based on Google's DownpourSGD.
- Implemented the project on Python, using PyTorch, Flask, OpenAI Gym, based on a client-server model.

GoTPE
github.com/mukherjeearnab/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/mukherjeearnab/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.

PUBLICATIONS

SmartMixModel: Machine Learning-based Vulnerability Detection of Solidity Smart Contracts 2022
5th IEEE International Conference on Blockchain (Blockchain 2022), IEEE Press. (Submitted)
Supriya Shakya, Arnab Mukherjee, Raju Halder, Abyayananda Maiti, Amrita Chaturvedi.

A Blockchain-Based Integrated and Interconnected Hybrid Platform for Smart City Ecosystem 2022
Peer-to-Peer Networking and Applications (PPNA), Springer (Under Review)
Arnab Mukherjee, Swagatika Sahoo, Raju Halder.

Blockchain-Enabled Emergency Detection and Response in Mobile Healthcare System May 2022
IEEE International Conference on Blockchain and Cryptocurrency (ICBC '22), IEEE Press. (Accepted)
Suryakanta Panda, Arnab Mukherjee, Raju Halder, Samrat Mondal.

A Unified Blockchain-based Platform for Global e-waste Management 2021
International Journal of Web Information Systems (IJWIS), Volume 17(5): 449-479. Emerald Publishing.
Swagatika Sahoo, Arnab Mukherjee, Raju Halder.

An Integrated Platform for Vehicle-Related Services and Records Management using Blockchain Technology Apr 2021
13th Asian Conference on Intelligent Information and Database Systems (ACIIDS '21), Springer CCIS 1371.
Arnab Mukherjee, Raju Halder.

PoliceChain: Blockchain-Based Smart Policing System for Smart Cities Nov 2020
13th International Conference on Security of Information and Networks (SIN '20), ACM Press.
Arnab Mukherjee, Raju Halder.

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)*