Arnab Mukherjee

Undergraduate CSE Student

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ABOUT ME

Hi, I'm Arnab Mukherjee. I'm currently pursuing B.Tech in Computer Science & Engineering at RCC Institute of Information Technology. My interests lie in Blockchain technology, Machine Learning, and Web Development. I have experience working with LAMP and MERN stack, Hyperledger Fabric and Ethereum. My other interests include exploring and solving machine learning problems. I also enjoy designing and developing various frontends. Besides these, I love playing the guitar and piano and sometimes arrange pieces for them.

EDUCATION

RCC Institute Of Information Technology **Kolkata, India**
B. Tech. in Computer Science & Engineering *Expected Graduation: June 2022*
GPA: 8.6/10.0

Kendriya Vidyalaya Ballygunge **Kolkata, India**
Higher Secondary Education (PCM+CS) *May 2015 - March 2018*
Percentage: 82.6%

EXPERIENCE

Indian Institute of Technology Patna **Patna, India**
Research Intern *May 2020 - July 2020*

- Designed and Developed two platforms for Smart Policing and Online Transportation services, leveraging the power of Blockchain technologies.
- Implemented them using the Hyperledger Fabric Blockchain platform, an Expresse.js Rest API middle-ware, and a React JS frontend to establish the platform. Implementations are available on GitHub.

Insolva Solutions Inc. **Kolkata India**
Web Development Intern *February 2020 - April 2020*

- Designed and developed a website for an NGO implemented on the LAMP stack, with the integration of a payment gateway for donations and features to support the creation and management of blog posts on the website.

PUBLICATIONS

An Integrated Platform for Vehicle-Related Services and Records Management using Blockchain Technology
Arnab Mukherjee, Raju Halder

- Proc. of the 13th Asian Conference on Intelligent Information and Database Systems (ACIIDS '21), Pages 337-351.
- Phuket, Thailand, 7-10 April 2021. Springer CCIS 1371.

PoliceChain: Blockchain-Based Smart Policing System for Smart Cities
Arnab Mukherjee, Raju Halder

- Proc. of the 13th International Conference on Security of Information and Networks (SIN '20), Pages 1-5.
- Istanbul, Turkey, 4-6 Nov 2020. ACM Press.

PROJECTS

GoTPE: A TPE implementaion in GoLang

github.com/mukherjeearnab/gotpe

- Implementation of Threshold Predicate Encryption (TPE) in GoLang.
- A variant of functional encryption, based on the protocol specifications in `DOI: 10.1109/TIFS.2018.2838540`

Deep Learning Vulnerablity Detection Model for Solidity

github.com/mukherjeearnab/bigquery-ether-lstm-swc

- Detection of Smart Contract Weakness Classification (SWC) by analyzing the bytecode of the compiled smart contracts using Deep Learning techniques.
- We used the Ethereum BigQuery dataset and labeled the dataset using the Mythril smart contract analysis tool. The DL model, based on LSTM architecture achieved an F-1 score of 97.85% during the tests.

Solc API

github.com/mukherjeearnab/solc-api

- An API to compile Solidity Code automatically detecting the version pragma. Ideal for huge datasets of Solidity code.
- Implemented on Node.JS, utilizing the JS binaries of solc (Solidity Compiler).

Blockchain-Based Smart Policing System

github.com/mukherjeearnab/policing-network

- A working prototype of **PoliceChain**.
- Implemented on Hyperledger Fabric, with smart contracts written in GoLang and middle-ware implemented on Node.JS, this project was part of my work at IIT Patna during my internship in the summer of 2020.

CaffeineW

github.com/mukherjeearnab/CaffeineW

- A Caffeine like app for Windows.

React JS Frontend for PoliceChain

github.com/mukherjeearnab/policing-network-frontend

- The React JS frontend for project PoliceChain. Used Material UI as the UI framework, along with Axios for API integration.

MIDI music generation using LSTM

github.com/mukherjeearnab/lstm-music

- This project aims to train an LSTM model on a dataset of MIDI files to generate music, outputted as MIDI files using the trained LSTM model. The project was implemented using the Tensorflow DL library.

Gesture Controlled Robot Car

github.com/mukherjeearnab/gesturecontrolrobot

- A gesture controlled robot car implemented on the Arduino platform, using the MPU6050 gyroscope sensor and RF24L01 radio module to wirelessly control the car, based on the articulation of the the gyroscope sensor.

ColorDropX

github.com/mukherjeearnab/colordropx

- A cross-platform color picker tool built on the Qt platform, supporting Linux, Windows and MacOS.

Periodica 12

github.com/mukherjeearnab/periodica12

- A Periodic Table app built on C#, that provides over 50 different fields of information of elements in the Periodic Table. This is the GUI implementation of my first project 'Periodica' after learning to code for the first time, originally built on C++.

SKILLS

- **Web Development:** HTML5 with CSS3, Javascript, Node.JS, PHP, React JS, Bootstrap 4.
- **Software Development:** Java, C++, C#, Python, Android, GoLang.
- **Machine Learning Libraries:** Scikit-Learn, Tensorflow.
- **Blockchain Technologies:** Ethereum, Hyperledger Fabric, Solidity, Hyperledger Caliper, Mythril.
- **Database Systems:** MongoDB, MySQL.
- **Misc. Technologies & Tools:** Linux, Git, Arduino, Docker.