ALOK S JAISWAL

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EDUCATION

National Institute of Technology Goa *July 2016 - June 2020*
Fourth Year Undergraduate Overall GPA: 8.45/10
Department of Computer Science and Engineering

TECHNICAL STRENGTHS

Computer Languages Python, JavaScript, C/C++, Solidity, SQL
Software & Tools Reactjs, Ethereum, Flask, LaTeX, Git, Truffle, Node.js, REST, Express.js

EXPERIENCE

Siemens 25 May 2019 - 25 July 2019
Blockchain Developer Intern

- Developed a blockchain platform and implemented distributed application(DApp) on it, which was then integrated in the original pipeline, thereby enabling the clients to get the sensor data from the blockchain node securely and easily.
- Developed a RESTfull API service for the blockchain platform allowing low storage devices such as sensors, mobile phones,etc to interact with the network .
- Designed and implemented Proof of Authority(POA) Consensus Algorithm in the Framework, which ensured that all the nodes in the distributed network comes to common agreement.

PROJECTS

Offline Second Factor Authentication for ATM Transactions February 2020 - March 2020
Guided by: Dr. Modi Chirag Navinchandra, NIT Goa *NIT Goa*

- I have designed and developed a offline challenge-response scheme using elliptical curve cryptography to authenticate the user(card holder) before proceeding with the transaction, this design provides same level of security as with authentication with OTP. The design works offline as the authentication is done using private key present in the Android app.To secure the private key we used concept of data encapsulation and implemented app lock.
- Proposed model makes task of attacker almost impossible, details required to attack are :
{ ATM Card, ATM Pin, Users Mobile, App lock passcode}
- I have used QR code encoding and decoding to make the user interaction simple. QR code is an encoding of an encrypted random number generated by ATM in real-time, now user authentication is done when the user scans the QR code and provides the decryption of random number to ATM.

NITGChain May 2019-April 2020
Guided by: Dr. Modi Chirag Navinchandra, NIT Goa *NIT Goa*

- We designed and implemented a Blockchain platform for the institute(NIT Goa) in python from scratch, in which we have solved problems like scalability and decentralization of network.
- We designed a consensus algorithm called Proof of Reputation a Round-robin approach, we made a common shared authority sequence and turn of authority is determined by this list, hence preventing monopoly attack and 51% attack. Round-robin approach allowed every authority to earn transaction fees on its turn.
- We used Kademlia distributed hash table Algorithm for efficient node discovery. We used Digital signatures as our key security component, attacker have to forge digital signatures of many authorities which is almost impossible.

Chain of Things March 2019 - April 2019
Guided by: Dr. Modi Chirag Navinchandra, NIT Goa *NIT Goa*

- We integrated IOT and ethereum blockchain, to do so we had developed a pipeline between Arduino Nodemcu (ESP8266) and go-ethereum(geth) by developing a intermediate blockchain API which handled IOT device authentication, encoding, decoding, compression and decompression of data.
- Pipeline created: Sensor$\rightleftharpoons$ *Arduino* $\rightleftharpoons$ *Blockchain_API* $\rightleftharpoons$ *Ethereum_NODE* $\rightleftharpoons$ *Network*
- We generated device_id on connection with API and used device_id to distinguish a particular sensor based on id, this helped in easy extraction and analysis of data of particular sensor from blockchain.
- All communication between the API and blockchain node is encrypted using public key cryptography.

Trustworthy and Incentivized Energy Auctioning in SmartGrid Jan 2019 - Feb 2019
Guided by: Dr. Modi Chirag Navinchandra, NIT Goa *NIT Goa*

- We designed a distributed Energy auctioning framework using smart contracts in ethereum blockchain. Platform enabled the prosumers and consumers to interact directly without any intermediary. We Devepoled a automated auctioning algorithm using vickery auctioning algorithm on smart contract.
- Auction provides profit for both consumer as well as prosumer and the trust and accountability is ensured by smart contracts.

RESEARCH PAPERS AND PUBLICATIONS

A Novel Framework for Pharmaceutical Supply Chain Management using Distributed Ledger and Smart Contracts [Link]
Guided by: Dr. Modi Chirag Navinchandra, NIT Goa *Jan 2019 – May 2019*

Published in: 2019 10th International Conference on Computing, Communication and Networking Technologies (ICCCNT), IIT Kanpur

- Created a Distributed trading platform for a transparent and trusted trading of the medicines(drugs) using ethereum blockchain. We used multiple connected smart contracts, where each contract represent a state in trading process. Money transfer and logistic commands were automated using smart contract itself, which ensured the accountability and immutability of all transactions.
- Live tracking of quality and supply of drugs from manufacturer to end user and maintain Accountability.

A Conceptual Framework for Trustworthy and Incentivized Trading of Food Grains using Distributed Ledger and Smart Contracts[Link]
Guided by: Dr. Modi Chirag Navinchandra, NIT Goa *May 2019 – July 2019*

Published in: 16 IEEE India Council international Conference INDICON 2019, Rajkot, India
Proposed a conceptual framework for decentralized trading of food grains, which allowed farmer and the customers to trade directly with any intermediaries. Used Ethereum Blockchain platform to provide Trust, Transparency and accountability and developed smart contracts for the same.

POSITION OF RESPONSIBILITY

- **Department Academic Volunteer** August 2019 - November 2019
  Blockchain and cryptography *NIT Goa*
- Volunteered under the Department Academic Volunteer Programme to hold sessions for a batch of 20 second year students to help with Blockchain and Cryptography concepts
- Conducted weekly session which had slots for lecture and doubts.
- Mentored 4 teams of 5 students each, guided them for blockchain based projects.

HALL OF FAME

D-Link

· Report vulnerability in DIR-600M Firmware

EXTRACURRICULAR

· Event Organiser at Saavyas 2018 at NIT Goa

Seminars

· International Blockchain Congress Goa 2018
· Conference on Computational Partial Differential Equations at NIT Goa

CERTIFICATIONS

· IBM Blockchain Foundation for Developers
· Lucideus Certified Ethical Hacker