Rajesh **Subhankar**

LEAD BLOCKCHAIN ENGINEER · SOLIDITY EXPERT

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"Be the change that you want to see in the world."

Summary

Current Blockchain Engineer at start-up company ToBlockchain. 3+ years of experience specializing in backend development, blockchain implementation, ideation, and rapid prototyping. Super nerd who loves Ethereum and Bitcoin and enjoys to build decentralized applications. Interested in contributing to innovative business challenges, and learning new technologies if the need arises.

Work Experience

ToBlockchain   *The Hague, Netherlands*

LEAD BLOCKCHAIN ENGINEER & CORE MEMBER   *Mar. 2018 - Present*

- Built and managed consortium blockchain networks using *Parity & Quorum* on Azure cloud infrastructure. This includes server provisioning, node configurations, RPC rules, network monitoring, and performance tuning.
- Configured and deployed network management tools like *net-stats, block explorer, & faucet service*.
- Built and deployed application-specific smart contracts to handle business logic using frameworks like *truffle*.
- Gained significant experience in smart contract auditing, both manual and automatic using various static code analyzer and symbolic execution engines like *Mythril & Manticore*.
- Implemented RESTful API for lite data analysis on top of the blockchain network.
- Implemented microservice to update real-time sensor data on to the blockchain network.
- Implemented frontend component to interact with the blockchain network using *web3.js & Metamask*.
- Created several research reports on DLT maturity assessments and smart contract best practices.
- Limited research on key management to help my clients facilitate easy and quick user onboarding to their dApps.
- Significant contribution towards the creation and validation of new innovative business ideas like a provably fair board game on blockchain(*Battleship*), and one-stop smart contract developer tool.
- Extensive contribution towards rapid prototyping to validate new ideas.

VISA Inc.   *Bangalore, India*

SENIOR SOFTWARE ENGINEER   *Aug. 2015 - Feb. 2018*

- Implemented RESTful APIs for VISA's billing and report platform.
- Implemented background windows service for secure file transfer using *Rebex*.
- Built several webMVC components for managing VISA's client portfolio.
- Implemented several DB stored procedures to handle complex multidimensional data models.
- Built several critical features for *Redis* client in collaboration with *Redis* opensource team.
- Implemented a decentralized clearing and settlement service (POC) using Hyperledger as part of VISA's blockchain working group.
- Built a social pay mobile app (POC) to facilitate card to card payments using VISA direct API as part of VISA's strategic and innovation portfolio.

Education

Indian Institute Of Technology   *Kanpur, India*

M.TECH IN COMPUTER SCIENCE AND ENGINEERING   *Mar. 2013 - Aug. 2015*

- CPI of **8.29** out of 10.
- Secured **Top 100** position in All India Competitive Algorithm Coding.
- Recognition for the research and development of an efficient machine learning algorithm to detect click frauds in online advertisements.
- Developed a machine learning based disease prediction application based on previously recorded heart sounds.

Spintronic Technology and Advance Research   *Bhubaneswar, India*

B.TECH IN COMPUTER SCIENCE AND ENGINEERING   *Dec. 2009 - Jan. 2013*

- CPI of **7.71** out of 10.

Jawahar Navodaya Vidyalaya   *Kendrapara, India*

GRADE 12   *2009*

- Secured **86** percentage.

Jawahar Navodaya Vidyalaya   *Kendrapara, India*

GRADE 10   *2007*

- Secured **88.6** percentage.

Certifications

| 2019 | **Cryptography I by Stanford University**, Coursera | *Online* |
| 2018 | **Ethereum Developer Program Bootcamp**, Consensys | *Online* |

Honors & Awards

INTERNATIONAL

2018	**2nd Place**, FINOS Trust Hackathon	*Amsterdam, NL*
2018	**Under Top 10**, Consensys:uPort Blockchain & Identity Hackathon	*Online*
2017	**Winner**, Blockchain for Energy Innovation Award	*The Hague, NL*
2017	**Winner**, Blockchain for Public Good Innovation Award	*The Hague, NL*
2017	**Winner**, Dutch Blockchain Hackathon, Energy Track	*Groningen, NL*
2016	**Winner**, ABN AMRO Hyperledger Hackathon	*Amsterdam, NL*
2016	**Finalist**, Dubai Entrepreneur Day	*Dubai, U.A.E.*

DOMESTIC

2014	**Rated as Expert**, CODEFORCES Competitive Coding Challenge	*Kanpur, India*
2014	**All India Rank 322**, CODECHEF Competitive Coding Challenge, Short Contest	*Kanpur, India*
2014	**All India Rank 71**, CODECHEF Competitive Coding Challenge, Lunch Time	*Kanpur, India*

Writing

Smart Contract Best Practices & Security Audits · *ebook*

WRITER · *Oct. 2018 - Dec. 2018*

- A recommendation report that covers various security and vulnerability aspects of *Ethereum* blockchain with respect to the smart contract development.
- The goal was to educate smart contract developers about various security attack patterns, contract management & upgradability approaches, contract auditing & best practices, protocol & language specific security recommendations.

DLT Maturity Model & Assessments · *ebook*

WRITER · *Sept. 2018 - Jan. 2019*

- A research report that covers assessment on **20+** criteria across four main DLT technologies, namely – *Ethereum, IOTA, Hyperledger and Energy Web*.
- The goal was to help senior corporate management to take an informed decision on DLT/Blockchain technology that is most suitable for their specific business use cases.

Research Activity

Combined Classifier Based Approach for Catching Click Spammers · *IIT Kanpur, India*

MASTER THESIS · *Aug. 2014 - July. 2015*

- The goal was to design a machine learning based model to detect online click frauds in highly imbalanced classification dataset.
- Successfully built a variant of an ensemble of classifiers which can learn the behaviors and patterns of fraudulent publishers and advertisers based on carefully designed spatial, temporal, and derived feature set.
- This model outperformed several state-of-the-art solutions with **98%** of accuracy and **61%** of average precision when tested against a very large dataset provided by one of the leading advertising networks.

A Comparative Analysis of Time Stamped Based Packet Scheduling Algorithms · *Bhubaneswar, India*

PUBLICATION · *Oct. 2010*

- Published in the Proc. of All India National Seminar on Computing, Communication and Sensor Network,CCSN-2010.

In-browser Based Key Management for Low Risk Decentralized Applications (dApp) · *ToBlockchain, Netherlands*

LIMITED RESEARCH & FINDINGS · *Sept. 2018*

- The goal was to find a key management solution which is neither managed by any centralized service provider nor is managed by end users.
- Successfully designed an in-browser based deterministic key generation using *scrypt & tweetnacl* and built a secure temporary key storage using *WebCryptographiAPI & indexed DB*.

Opensource Activity

EtherAtom - Ethereum contract execution interface for atom editor

JavaScript

CONTRIBUTOR

Oct. 2018

- Added support for npm package imports in solidity smart contracts.
- Added support for regex match to find correct contract locations.

Demo-Crowdsale-ERC20Token - Quick ICO simulation dApp

JavaScript, Solidity

OWNER & CONTRIBUTOR

Jun. 2018

- Added new **ERC20** token creation contract.
- Added Support for **ERC223** standard.

StackExchange.Redis - General purpose Redis client

C#

CONTRIBUTOR

Dec. 2017

- Added new **TAG** tokenization feature to create schema with tags.
- Added new **stop-words disable** feature to support schema with stop-words.

Technical Skills

Blockchain Technology

ETHEREUM, QUORUM, HYPERLEDGER, BITCOIN, CORDA

- Specialised in Consortium network setup and tuning.

Blockchain Programming & Framework

SOLIDITY, WEB3.JS, CHAINCODE, TRUFFLE, REMIX, VYPER

- Specialised in solidity based secure smart contract development.

Blockchain Services

METAMASK, UPORT, INFURA, ORACLIZE, PUPPETH

- Specialised in uPort identity and attestation implementation.

Blockchain Testing & Auditing

GANACHE, MYTHRIL, MANTICORE, SOLIDITY-COVERAGE, MOCHA, CHAI

- Specialised in smart contract auditing using Manticore.

Blockchain Filesystem & Database

IPFS, ORBIT DB

- Limited experience with Orbit DB.

Programming

C#, ASP.NET, JAVASCRIPT, NODE.JS, JAVA, C++, GO, PYTHON, REACT.JS, HTML, CSS

- Extensive experience in C# and ASP.Net.

Database & Caching

MS SQL, MYSQL, REDIS, MONGO DB

- Specialized in stored procedure implementation and Redis services.

Projects

Power To Share

ToBlockchain, Netherlands

MVP (PARITY, SOLIDITY, NODE.JS, REACT.JS, MYSQL)

Mar. 2018 - June. 2018

- A decentralized peer-to-peer green energy and certificate sharing platform.
- I was responsible for complete end-to-end product design and development except for user interface.
- My core contribution was to build and maintain parity based consortium blockchain network, and implement solidity based smart contracts to facilitate business logic.

Battleship

ToBlockchain, Netherlands

POC (LOOM-NETWORK, SOLIDITY, JAVASCRIPT, MYTHRIL, MANTICORE)

Sept. 2018 - Oct. 2018

- A true provably fair board game on the public blockchain.
- I was responsible for complete end-to-end product design and development except for user interface.
- My core contribution was to build solidity based secure smart contracts to solve transaction ordering dependency (front running) issue using commit and reveal design patterns.

Trust Platform

POC (Quorum, Solidity, JavaScript, Node.js, IPFS)

ToBlockchain, Netherlands

Aug. 2018

- A hassle-free bank account opening process for corporates using blockchain.
- I was responsible for coming up with the solution and building blockchain components.
- My core contribution was to design and build *Proof of Process* consensus mechanism using solidity and to implement *Shamir's secret sharing* to facilitate smart contract based file access control on IPFS.

Innovation Garage

Ideation

ToBlockchain, Netherlands

Jun. 2018 - Aug 2018

- Several blockchain based use-cases like machine-to-machine payments, peer-to-peer trading and developer tools.
- I was responsible for coming up with business ideas, quick validation, and rapid prototyping.
- My core contribution was to do market research and evaluate how blockchain can help in certain business processes.

Learno

POC (Solidity, uPort, JavaScript, React.js)

Hackathon, Online

Dec. 2017

- An innovative *Learn Now, Pay Later* platform on blockchain.
- I was responsible for complete end-to-end product design and development.
- My core contribution was to design and build digital traceable certificates using uPort identity and data services along with solidity based smart contracts.

ICO Simulation

Ready to Use (Solidity, JavaScript)

Github, Opensource

Oct. 2017

- An ERC-20 token based ICO/crowdsale simulation application.
- I was responsible for complete end-to-end implementation.
- My core contribution was to create flexible, ready to use standard ERC-20 tokens using truffle framework.

In-Car Safety

MVP (Hyperledger, Chaincode, Java)

Github, Opensource

Oct. 2017

- A real-time crime detection and auditing platform for public transports.
- I was responsible for implementing blockchain components.
- My core contribution was to implement a hyperledger based permissioned blockchain network with various legal institutions as stakeholders and to build live video stream proofs using chaincode contracts.

True Mandate

POC (Hyperledger, Chaincode)

Hackathon, Netherlands

Sept. 2016

- A decentralized smart meter data mandate application.
- I was responsible for implementing backend and blockchain components.
- My core contribution was to implement a hyperledger based permissioned blockchain network with various energy companies as stakeholders and to build smart contracts to manage user mandates using chaincode.

Visachain

POC (Hyperledger, Chaincode, C#, ASP.Net)

Hackathon, India

Sept. 2016

- An innovative low-cost clearing and settlement platform for unbanked and underbanked individuals.
- I was responsible for ideation and blockchain implementation.
- My core contribution was to build an enterprise blockchain network with various financial service providers as stakeholders and to build a smart contract based transaction settlement API.

Decentralized KYC

POC (Solidity, Angular)

Personal, India

July. 2016

- My first blockchain based application to demonstrate decentralized onetime KYC process.
- I was responsible for ideation and complete end-to-end implementation.
- My core contribution was to build simple smart contracts to handle proof of address in public ethereum network.

Social Pay

MVP (C#, ASP.Net, MS SQL)

VISA Inc., India

June. 2016

- A card-to-card payment application for socially connected people.
- I was responsible for backend implementation.
- My core contribution was to leverage VISA direct API to facilitate card-to-card payments.

Pay4Me

MVP (Android, C#)

VISA Inc., India

Mar. 2016

- A mobile application which connects service providers with apartment residents for recurring cashless payments.
- I was responsible for backend implementation.
- My core contribution was to implement recurring direct debit feature.

Client Profiler
VISA Inc., India

In Production (C#, WebAPI, WebMVC, MS SQL, Redis)
Sept. 2016 - Feb. 2018

- A card issuer's portfolio management application.
- I was responsible for implementing several backend and caching components.
- My core contribution was to build WebAPI, DB stored procedures and data caching solutions using Redis.

Client Report Portal
VISA Inc., India

In Production (C#, WebAPI, WebMVC, MS SQL, Rebex)
Aug. 2015 - July. 2016

- A billing and reporting tool for VISA's clients.
- I was responsible for implementing several backend and file transfer services.
- My core contribution was to build WebAPI, DB stored procedures and windows service for secure file transfer.

Classifying Heart Sound Challenge
IIT Kanpur, India

Academic (Java, R, Weka)
Aug. 2014 - Nov. 2014

- A classic heart disease prediction challenge.
- I was responsible for defining solution for this challenge.
- My core contribution was to build a machine learning model which can predict heart diseases by analyzing previously recorded heart sounds.

Automatic DEM Generation by Multi Image Feature Based Matching
IIT Kanpur, India

Academic (Nvidia GPU, CUDA)
Nov. 2013 - May. 2014

- A 3D image extraction tool from multiple 2D images.
- I was responsible for implementing parallel algorithm techniques to generate DEM.
- My core contribution was to built the solution using Nvidia Tesla T10 GPU machine using CUDA.

Peer-to-Peer Collaborative Drawing
IIT Kanpur, India

Academic (Android, Alljoyn)
Nov. 2013 - May. 2014

- A realtime multi-party collaborative drawing over WiFi network.
- I was responsible for complete end-to-end application development.
- My core contribution was to implement synchronize data points over single canvas using Alljoyn communication service.

Presentation

Dubai Entrepreneur Day
Dubai, U.A.E.

Presenter for <Demonstrating inCar safety application built on top of Hyperledger blockchain>
Nov. 2016

- A *Hyperledger* based dApp to audit crimes in public transports.
- The goal was to demonstrate how IoT & blockchain can be combined together to offer a multi-party trustless and safe transport business.

VISA Blockchain Bootcamp
Bangalore, India

Presenter for <Write your first smart contract on top of Ethereum>
Aug. 2016

- A solidity based training module to write and deploy smart contracts on the ethereum network.
- The goal was to educate developers about the fundamentals of blockchain and how to get started with it.

Extracurricular Activity

Indexing and searching techniques in databases
IIT Kanpur, India

Teaching Assistance
Jan. 2015 - May. 2015

- Created and managed labs for students.
- Contributed towards overall course management.

Computer networks
IIT Kanpur, India

Teaching Assistance
Aug. 2014 - Nov. 2014

- Created and managed labs for students.
- Contributed towards overall course management.

Fundamentals of computing
IIT Kanpur, India

Teaching Assistance
Aug. 2013 - May. 2014

- Created and managed labs for students.
- Contributed towards overall course management.

Program Committees

| 2017 | **Event Communication Lead,** VISA Global Hackathon | *Bangalore, India* |
| 2016 | **Organizer,** Blockchain & Bitcoin Meetup | *Bangalore, India* |