Praveensankar Manimaran

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Bio

Praveensankar Manimaran is currently doing PhD at the Department of Computer Science, University of Oslo, Norway. His research interests are Blockchain Protocols, Decentralized Applications, Distributed Systems, and Applied Cryptography. Praveen's PhD gave him experience in identifying and solving non-trivial research problems that directly impact the industry use cases. In addition, Praveen has experience in project management, effective communication and coordination of tasks among team members, and time management.

Education

Ph.D. - Informatics, *University of Oslo* — 2020 Oct – 2024 Oct, Oslo, Norway

- Research in **Verifiable Credentials** and **Blockchain Technologies**
- Worked on privacy issues in VCs's revocation and verification, and developed solutions using techniques such as Merkle Tree Accumulators, BBS Signatures, and Zero-Knowledge Proofs.
- Implemented prototypes to showcase the practicality of the solutions
- Published research papers in top venues.
- Worked as a Teaching Assistant for: IN5020- Distributed Systems (2022, 2023), IN5420- Distributed Blockchain Technologies (2022, 2023)
- Installed and maintained Norway's EBSI pilot node
- Supervisors: Roman Vitenberg, Leander Jehl
- Advisors: Thiago Garrett, Mayank Raikwar, Arlindo F. Conceição

M.Tech. - Computer Science and Engineering, *National Institute of Technology Puducherry* — 2018 Jul – 2020 Jun, Karaikal, India

- CGPA: 9.82, **Gold Medalist**

B.E. - Computer Science and Engineering, *PSG College of Technology* — 2012 Jul – 2016 May

Publications

Prevoke: Privacy-Preserving Configurable Method for Revoking Verifiable Credentials, *2024 IEEE International Conference on Blockchain (Blockchain).* — 2024 Oct

- Prevoke presents privacy issues in revoking VCs and presents a solution based on Bloom Filters, Merkle Tree Accumulators, and Smart Contracts.
- Prevoke also proposes a novel two-phase verification technique to optimize the efficiency of VCs' verification. Most of the valid VCs would go through efficient and fast verification. Only revoked VCs and a handful of valid VCs would go through expensive verification.

Understanding Decentralized Identity: From Federated to Self-Sovereign Identity Management Systems, *ACM Computing Surveys (Under Review)* 2024

- Provides a generic model to analyse the architecture of IMSs
- Using the generic model, analyze a) IOTA Id, b) Indy, and c) eIDAS.
- Discusses the differences between these IMSs using a novel taxonomy

Addressing traceability of revocation status of Verifiable Credentials,
(Work in Progress)

- Utilises Zero-Knowlege Proofs to address traceability problem

Projects

Prevoke, *Implementation*

- This Implementation demonstrates the working of *Prevoke* in a sand-boxed environment.
- This implementation consists of a) standard entities (Issuer, Holder, and Verifier), b) a Smart Contract, and c) a mock VC data model based on W3C Specifications.
- **Workflows:** 1) issuance, 2) revocation, 3) VP construction and sharing, and 4) VP verification.
- In addition, Smart Contract is deployed on a Private Blockchain using Ganache, hosted in NREC.
- The entities are hosted as servers and geographically distributed using NREC.
- **Results:** We analyzed the performance, latency, and cost of Prevoke for different workloads.
- **Languages:** Golang, Solidity

Professional Experience

Software Engineer, *Accolite Software India Pvt Ltd* 2016 Jul – 2017 Mar

- Worked on web development using technologies associated with .NET frameworks and angularjs.

Skills

Verifiable Credentials	●●●●●	Blockchain	●●●●●
Research	●●●●●	Golang	●●●●○
Privacy	●●●●○	Project Management	●●●●○

References

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