MOHSEN MINAEI

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PROFESSIONAL SUMMARY

Senior Research Scientist with four years at Visa Inc., specializing in security, privacy, and blockchain technologies. With a strong background in building scalable, secure, and privacy-preserving systems, I enhanced fraud detection at Microsoft, boosting security and reliability. Experienced in leading innovative projects and designing secure, privacy-focused protocols, I am committed to driving cutting-edge solutions in technology-driven environments.

EDUCATION

- Purdue University, Indiana, USA, 2014 - 2020
  Ph.D. in Computer Science, Advisor: Aniket Kate, GPA: 3.97/4.0
- Purdue University, Indiana, USA, 2014 - 2019
  M.S. in Computer Science, GPA: 4.0/4.0

WORK EXPERIENCE

- **Senior Research Scientist** at **Visa Inc.**, Leading the Digital Currency Team 2023 - Current
- **Staff Research Scientist** at **Visa Inc.**, Security and Digital Currency Team 2020 - 2023
- **Research Scientist Intern** at **Visa** Inc., Blockchain Team 2019
- **Data Scientist Intern** at **Microsoft**, Cloud + AI, Xbox Knowledge Platform Team 2018
- **Program Manager Intern** at **Microsoft**, Universal Store, Fraud Detection Team 2017
- **Software Engineering Intern** at **Microsoft**, Universal Store, Fraud Detection Team 2016
- Teaching Assistant for 8 different courses in Purdue and Sharif University. 2011 - 2018

SELECTED PROJECTS

- **Programmable Payment Channels and Scalable Blockchain Auctions**
  Technologies: Ethereum, Smart Contracts, Payment Channels, zk-SNARKs
  - Developed off-chain payment channels for secure, programmable transactions
  - Enabled dynamic enforcement of payment conditions, minimizing on-chain verification requirements
  - Leveraged zk-SNARKs to ensure bid privacy and security in auctions, cutting blockchain congestion and costs
- **Central Bank Digital Currency (CBDC) Pilot**
  Technologies: CBDC, Tokenized Deposits, Digital Settlement, Hyperledger Besu, Solidity, Foundry Framework
  - Led protocol development in HKMAs e-HKD Pilot to test CBDC use cases and tokenized deposits
  - Implemented smart contracts for tokenization and intra-bank and inter-bank transfers
  - Collaborated with HSBC and Hang Seng Bank on digital settlement initiatives within the e-HKD sandbox
- **Blockchain-Based Programmable Finance Platform**
  Technologies: Ethereum, Smart Contracts, NFT, CBDC, Solidity, Brownie Framework
  - Led protocol development of Visas prototype of Brazils Real Digital CBDC for asset tokenization and auctioning
  - Implemented an on-chain auction and integrated Visas Universal Payments Channel for currency interoperability
  - Overcame challenges in cross-currency payments, asset tokenization, and smart contract automation
- **User Retention for Xbox Game Pass**
  Technologies: Machine Learning, Data Analysis, A/B Testing
  - Engineered a structured database of user profiles to predict subscription behaviors
  - Applied machine learning to identify users at risk of canceling Xbox Game Pass, enhancing retention strategies
  - Executed A/B testing to validate personalized game recommendations and offers, boosting engagement.

SELECTED PATENTS

- **Fast Sync Blockchain System and Method** (Link) 2024
  A. Bhat, **M. Minaei**, M. Zamani
- **Privacy-Preserving Detection for Directional Electronic Communications** (Link) 2023
  S. Das, S. Raghuraman, M. Zamani, R. Kumaresan, **M. Minaei**, S. Meiser, M. Christodorescu, W. Gu, Y. Yang
- **Universal Payment Channel System and Method** (Link) 2023
  M. Minaei, R. Kumaresan, Y. Yang, S. Raghuraman, M. Zamani, M. Christodorescu, W. Gu
- **Conditional Offline Interaction System and Method** (Link) 2022
  R. Kumaresan, M. Zamani, S. Raghuraman, M. Christodorescu, **M. Minaei**
- **Accounting for Uncertainty When Calculating Profit Efficiency** (Link) 2019
  J. Nanduri, S.-J. Wang, **M. Minaei**

SELECTED PUBLICATIONS

- **Exploring the Interplay Between Interaction Experience and Security Perception of Payment Authentication in Virtual Reality** (Link) 2024
  IEEE Conference on Virtual Reality and 3D User Interfaces
  J. Li, S. S. Arora, K. Fawaz, Y. Kim, C. Liu, S. Meiser, **M. Minaei**, M. Shirvanian, K. Wagner
- **Programmable Payment Channels** (Link) 2024
  International Conference on Applied Cryptography and Network Security (ACNS)
  R. Kumaresan, D. V. Le, **M. Minaei**, S. Raghuraman, Y. Yang, M. Zamani
- **A Plug-and-Play Long-Range Defense System for Proof-of-Stake Blockchains** (Link) 2024
  European Symposium on Research in Computer Security (ESORICS)
  L. KL Ng, P. Chatzigiannis, D. V. Le, **M. Minaei**, R. Kumaresan, M. Zamani
- **Uncovering Impact of Mental Models Towards Adoption of Multi-Device Crypto-Wallets** (Link) 2023
  ACM Conference on Computer and Communications Security (CCS)
  E. V. Mangipudi, U. Desai, **M. Minaei**, M. Mondal, A. Kate
- **Unlinkability and Interoperability in Account-Based Universal Payment Channels** (Link) 2023
  International Conference on Financial Cryptography and Data Security (FC)
  M. Minaei, P. Chatzigiannis, S. Jin, S. Raghuraman, R. Kumaresan, M. Zamani, P. Moreno-Sanchez
- **SoK: Web3 Recovery Mechanisms** (Link) 2023
  P. Chatzigiannis, K. Chalkias, A. Kate, E. V. Mangipudi, **M. Minaei**, M. Mondal
- **Towards Overcoming the Undercutting Problem** (Link) 2022
  International Conference on Financial Cryptography and Data Security (FC)
  T. Gong, **M. Minaei**, W. Sun, and A. Kate
- **Empirical Understanding of Deletion Privacy: Experiences, Expectations, and Measures** (Link) 2022
  USENIX Security Symposium
  M. Minaei, M. Mondal, and A. Kate
- **All Your Credentials Are Belong To Us: On Insecure WPA2-Enterprise Configurations** (Link) 2021
  Conference on Computer and Communications Security (CCS)
  M. H. Hue, J. Debnath, K. M. Leung, L. Li, **M. Minaei**, M. H. Mazhar, K. Xian, E. Hoque, O. Chowdhury, S. Y. Chau
- **Deceptive Deletions for Protection of Withdrawn Posts on Social Media** (Link) 2020
  Network and Distributed System Security Symposium (NDSS)
  M. Minaei, C. Mouli, M. Mondal, B. Ribeiro, A. Kate,
- **Towards a Two-Tier Hierarchical Infrastructure: An Offline Payment System for Central Bank Digital Currencies** (Link) 2020
  M. Christodorescu, W. C. Gu, R. Kumaresan, **M. Minaei**, M. Ozdayi, B. Price, S. Raghuraman, M. Saad, C. Sheffield, M. Xu, M. Zamani
- **Expert Key Selection Impact on the MANETs' Performance Using Probabilistic Key Management Algorithm**
  International ACM Conference on Security of Information and Networks(SIN). (link) 2013
  M. Gharib, **M. Minaei**, M. Golkari Fard and A. Movaghar.