

MOHSEN MINAEI

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PROFESSIONAL SUMMARY

Senior Research Scientist with four years of experience at Visa Inc., specializing in security, privacy, and blockchain technologies. I hold a Ph.D. in Computer Science from Purdue University and have a robust background in developing scalable, secure, and privacy-preserving systems across various domains. My expertise includes significant work in fraud detection at Microsoft, where I contributed to enhancing the security and reliability of complex systems. Experienced in leading innovative projects and designing secure and privacy-focused protocols and systems, I am dedicated to advancing cutting-edge solutions in technology-driven environments.

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
- CEO of Gaming Studio Startup named Pooya Nik Pardaz(PNP) 2011 - 2013
- Teaching Assistant for 8 different courses in Purdue and Sharif University. 2011 - 2018

SELECTED PROJECTS

- **Blockchain-Based Programmable Finance Platform**
Technologies: Ethereum, Smart Contracts, NFT, CBDC, Solidity
 - 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
 - Addressed challenges in cross-currency payments, asset tokenization, and smart contract automation
- **Central Bank Digital Currency (CBDC) Pilot**
Technologies: CBDC, Tokenized Deposits, Digital Settlement, Hyperledger Besu, Solidity
 - 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 and the e-HKD sandbox
- **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 without constant on-chain verification
 - Designed a scalable auction system to reduce blockchain congestion and costs
 - Ensured bid privacy and security using zk-SNARKs, even if participants act dishonestly
- **User Retention for Xbox Game Pass**
Technologies: Machine Learning, Data Analysis, A/B Testing
 - Built a clean, structured database of user profiles and key features to predict subscription behavior
 - Used machine learning to identify users likely to cancel Xbox Game Pass, focusing on retaining at-risk users
 - Conducted A/B testing to validate personalized game recommendations and promotional offers for user retention

EDUCATION

- Purdue University, Indiana, USA, 2014 - 2020
Ph.D. in Computer Science, Advisor: Aniket Kate, GPA: 3.97/4.0
Relevant Coursework
Data Mining(A+), Algorithm Design and Analysis(A+), Cryptography(A+), Advanced Cryptography(A+), Network Security(A+), Computer Networks(A), Information Retrieval(A), Information Security(A), Blockchain (Audit) Qualification exams: Algorithms, Information Retrieval, Cryptography, Information Security, Computer Networks
- Purdue University, Indiana, USA, 2014 - 2019
M.S. in Computer Science, GPA: 4.0/4.0
- Sharif University of Technology, Tehran, Iran, September 2009 - 2013
B.S. in Computer(software) Engineering, GPA: 17/20 *Relevant and Mentionable Coursework (GPA: 19.50/20)*
Design Algorithms(20/20), Computer Networks(18.9/20), Computer Simulation(20/20), Technical and Scientific Presentation(20/20), Numerical Methods(20/20), Digital System Design(19.7/20), Operating Systems(18.9/20), Computer Structure & Language(19.3/20), Computer Professional English(19.2/20)

SELECTED PATENTS

- **Fast Sync Blockchain System and Method** (Link) 2024
Adithya Bhat, **Mohsen Minaei**, Mahdi Zamani
- **Universal Payment Channels** (Link) 2024
Mohsen Minaei, Ranjit Kumaresan, Mahdi Zamani, Sivanarayana Gaddam
- **System, Method, and Computer Program Product for Preventing Miner Extractable Value (MEV) Attacks in a Blockchain Network** (Link) 2023
Mohsen Minaei, Ranjit Kumaresan, Yibin Yang, Sourav Das, Srinivasan Raghuraman, Mahdi Zamani, Mihai Christodorescu, Wanyun Gu
- **Privacy-Preserving Detection for Directional Electronic Communications** (Link) 2023
Sourav Das, Srinivasan Raghuraman, Mahdi Zamani, Ranjit Kumaresan, **Mohsen Minaei**, Sebastian Meiser, Mihai Christodorescu, Wanyun Gu, Yibin Yang
- **Offline Interaction Blockchain System and Method** (Link) 2023
Mahdi Zamani, Ranjit Kumaresan, Srinivasan Raghuraman, **Mohsen Minaei**, Andrew Beams
- **Universal Payment Channel System and Method** (Link) 2023
Mohsen Minaei, Ranjit Kumaresan, Yibin Yang, Srinivasan Raghuraman, Mahdi Zamani, Mihai Christodorescu, Wanyun Gu
- **Conditional Offline Interaction System and Method** (Link) 2022
Ranjit Kumaresan, Mahdi Zamani, Srinivasan Raghuraman, Mihai Christodorescu, **Mohsen Minaei**
- **Universal Payment Channel** (Link) 2022
Mohsen Minaei, Ranjit Kumaresan, Srinivasan Raghuraman, Mahdi Zamani, Arjuna Wijeyekoon
- **Offline Interaction System and Method** (Link) 2022
Mahdi Zamani, Ranjit Kumaresan, Mihai Christodorescu, Cuy Sheffield, Benjamin Price, Wanyun Gu, Minghua Xu, Srinivasan Raghuraman, Muhammad Saad, Mustafa Ozdayi, **Mohsen Minaei**, Sourav Das
- **Accounting for Uncertainty When Calculating Profit Efficiency** (Link) 2019
Jayaram Nanduri, Shouou-Jiun Wang, **Mohsen 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
Jingjie Li, Sunpreet Singh Arora, Kassem Fawaz, Younghyun Kim, Can Liu, Sebastian Meiser, **Mohsen Minaei**, Maliheh Shirvanian, Kim Wagner
- **Programmable Payment Channels** (Link) 2024
International Conference on Applied Cryptography and Network Security (ACNS)
Ranjit Kumaresan, Duc V Le, **Mohsen Minaei**, Srinivasan Raghuraman, Yibin Yang, Mahdi Zamani
- **A Plug-and-Play Long-Range Defense System for Proof-of-Stake Blockchains** (Link) 2024
European Symposium on Research in Computer Security (ESORICS)
Lucien KL Ng, Panagiotis Chatzigiannis, Duc V Le, **Mohsen Minaei**, Ranjit Kumaresan, Mahdi Zamani

- **Tokenization of Commodity Receivable** (Link) 2024
Stuart Smith, Wanyun Gu, Mahdi Zamani, Akshay Kant, **Mohsen Minaei**, Alessandro Leite
- **Uncovering Impact of Mental Models Towards Adoption of Multi-Device Crypto-Wallets** (Link) 2023
ACM Conference on Computer and Communications Security (CCS)
Easwar Vivek Mangipudi, Udit Desai, **Mohsen Minaei**, Mainack Mondal, Aniket Kate
- **Unlinkability and Interoperability in Account-Based Universal Payment Channels** (Link) 2023
International Conference on Financial Cryptography and Data Security (FC)
Mohsen Minaei, Panagiotis Chatzigiannis, Shan Jin, Srinivasan Raghuraman, Ranjit Kumaresan, Mahdi Zamani, Pedro Moreno-Sanchez
- **How Interactions Influence Users' Security Perception of Virtual Reality Authentication?** (Link) 2023
Jingjie Li, Sunpreet Singh Arora, Kassem Fawaz, Younghyun Kim, Can Liu, Sebastian Meiser, **Mohsen Minaei**, Maliheh Shirvanian, Kim Wagner
- **SoK: Web3 Recovery Mechanisms** (Link) 2023
Panagiotis Chatzigiannis, Konstantinos Chalkias, Aniket Kate, Easwar Vivek Mangipudi, **Mohsen Minaei**, Mainack Mondal
- **Scalable Off-Chain Auctions** (Link) 2023
Mohsen Minaei, Duc V Le, Ranjit Kumaresan, Andrew Beams, Pedro Moreno-Sanchez, Yibin Yang, Srinivasan Raghuraman, Panagiotis Chatzigiannis, Mahdi Zamani
- **Autopayments Via Account Abstraction** (Link) 2022
Andrew Beams, Ranjit Kumaresan, **Mohsen Minaei**, Mahdi Zamani, Srinivasan Raghuraman, Wanyun Gu
- **Concurrent Interaction Channels** (Link) 2022
Mohsen Minaei, Ranjit Kumaresan, Srinivasan Raghuraman, Mahdi Zamani, Arjuna Wijeyekoon, Mihai Christodorescu
- **Towards Overcoming the Undercutting Problem** (Link) 2022
T. Gong, **M. Minaei**, W. Sun, and A. Kate
International Conference on Financial Cryptography and Data Security (FC)
- **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) Man Hong Hue, Joyanta Debnath, Kin Man Leung, Li Li, **Mohsen Minaei**, M Hammad Mazhar, Kailiang Xian, Endadul Hoque, Omar Chowdhury, Sze Yiu Chau
- **Universal Payment Channels: An Interoperability Platform for Digital Currencies** (Link) 2021
Mihai Christodorescu, Erin English, Wanyun Catherine Gu, David Kreissman, Ranjit Kumaresan, **Mohsen Minaei**, Srinivasan Raghuraman, Cuy Sheffield, Arjuna Wijeyekoon, Mahdi Zamani
- **Deceptive Deletions for Protection of Withdrawn Posts on Social Media** (Link) 2020
M. Minaei, C. Mouli, M. Mondal, B. Ribeiro, A. Kate,
Network and Distributed System Security Symposium (NDSS)
- **Towards a Two-Tier Hierarchical Infrastructure: An Offline Payment System for Central Bank Digital Currencies** (Link) 2020
Mihai Christodorescu, Wanyun Catherine Gu, Ranjit Kumaresan, **Mohsen Minaei**, Mustafa Ozdayi, Benjamin Price, Srinivasan Raghuraman, Muhammad Saad, Cuy Sheffield, Minghua Xu, Mahdi Zamani
- **MoneyMorph: Censorship Resistant Rendezvous using Permissionless Cryptocurrencies** (link) 2020
Proceedings on Privacy Enhancing Technologies (PoPETs) **M. Minaei**, P. Sanches, A. Kate
- **Privacy Preserving Systems With Crowd Blending** (link) 2020
PhD Thesis
M. Minaei
- **A Tale of Two Trees: One Writes, and Other Reads** (link) 2020
Proceedings on Privacy Enhancing Technologies (PoPETS)
Duc Le, Lizzy Tengana Hurtado, Adil Ahmad, **Mohsen Minaei**, Byoungyoung Lee, Aniket Kate
- **Forgetting the Forgotten with Lethe: Conceal Content Deletion from Persistent Observers** (link) 2019
Proceedings on Privacy Enhancing Technologies (PoPETS)
M. Minaei, M. Mondal, P. Loiseau, K. Gummadi, and A. Kate

- **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.

AWARDS, HONORS, TALKS:

- Talk: ‘MoneyMorph: Censorship Resistant Rendezvous using Permissionless Cryptocurrencies”(link) July 2020
Privacy Enhancing Technologies Symposium
- Talk: “Forgetting the Forgotten: Conceal Content Deletions from Persistent Observers” (link) November 2019
CERIAS Seminar, Purdue University, West Lafayette
- Talk: “Content Deletion Privacy” August 2019
Visa Research, Palo Alto
- Received Intel/CERIAS Research Fellowship Spring 2017
- First place in Salesforce.com Purdue Hackathon with real time ”Deals of The Day” November 2014
- Ranked 1st & 2nd in China-Open Robotic Competition (**team leader**), October 2007
In junior rescue league, individual and super-teams , Jinan, China.
- Ranked 2nd in Iran-Open Robotic Competition, in junior rescue league, Tehran, Iran. March 2007

SKILLS

- **Programming Languages:** Python, Java, C, Assembly(MIPS).
- **Web/DB Technologies:** HTML, CSS.
- **Operating Systems:**Linux, Mac Os, Windows.
- **Typesettings:** L^AT_EX, T_EX, Microsoft Office.