Umair Sarfraz

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Education

Master of Science, Information Security.   Fall 2018
Comsats University, Islamabad.

Bachelor of Science, Software Engineering.   Spring 2016
Comsats University, Islamabad.

Experience

Senior Software Engineer / Technical Lead   January 2021 - Present
IOTA Foundation, Berlin

- Led development of Software Development Kits (SDKs) and tooling for IOTA cryptocurrency network.
- Designed and architected a wallet library/package used by several cryptocurrency exchanges for listing IOTA currency on their platforms.
- Led design and development of a wallet *(Firefly)* for managing IOTA payments using Svelte/Electron/Capacitor.
- Developed a token migration tool for IOTA network during a major network upgrade.
- Worked as a Technical Program Manager responsible for IOTA integration with cryptocurrency exchanges.
- Worked as a Hiring Manager for recruiting Software Engineers for the wallet / libraries / tooling teams.

Software Engineer   February 2018 - December 2020
IOTA Foundation, Berlin

- Designed and developed a wallet *(Trinity)* for managing IOTA payments using React/React Native/Electron.
- Developed a proof-of-concept mobile application *Selv* around the concept self-sovereign identities.
- Implemented a module (node quorum) for increasing the confidence level of responses from different public nodes in the network.
- Implemented a tool for automatically rescuing blocked IOTA funds.

Software Engineer   July 2016 - January 2018
Wanclouds Inc., Islamabad

- Led the development of a cloud monitoring web application using React.
- Developed and maintained the development and test environments used by front end software engineers.
- Integrated the Jenkins Continuous Integration (CI) systems into the existing deployment processes.
- Provisioned and maintained Continuous Deployments (CD) over Kubernetes cluster using Ansible.

- Developed a test environment for end-to-end testing of a large web application backend using python.

Engineering Intern   October 2015 - May 2016
Inven Solutions, Rawalpindi

- Designed and developed a management software system for collaboration between for sports clubs using NodeJS/AngularJS.
- Developed mobile client applications for the management software using Ionic framework.

Technology Skills

Programming Languages: JavaScript / TypeScript, Python, Go.
Operations Technologies: DO/AWS/GCP/Azure Cloud Services, Docker, Kubernetes, Jenkins, Ansible, Vagrant.
Web Backend Technologies: NodeJS, Express, Flask, Nginx, MongoDB, PostgreSQL, CassandraDB, MySQL, Redis, RabbitMQ.
Web Frontend Technologies: ReactJS, Angular, Svelte, Capacitor, Redux, Mocha, Jest, Enzyme, Bootstrap, SASS, Gulp, Webpack, Rollup, Bower.
Mobile Technologies: React Native, Ionic, Capacitor, RealmDB.
Desktop Technologies: ElectronJS, Git.

Research Interests

Distributed systems
Cloud security
Software design patterns
Data privacy
Linux security
Philosophy

Publications

A. Shahid, U. Sarfraz, M. W. Malik, M. S. Iftikhar, A. Jamal and N. Javaid, "Blockchain-based reputation system in agri-food supply chain," In International Conference on Advanced Information Networking and Applications, pp. 12-21. Springer, Cham, 2020.

U. Sarfraz, M. Alam, S. Zeadally, and A. Khan, "Privacy Aware IOTA Ledger: Decentralized Mixing and Unlinkable IOTA Transactions," Computer Networks, vol. 148, pp. 361-372, 2019.

S.M. Shuja, N. Javaid, S. Khan, U. Sarfraz, S. H. Ali, M. Taha, and T. Mehmood, "Electricity Price Prediction by Enhanced Combination of Autoregression Moving Average and Kernal Extreme Learing Machine," in *Advances in Intelligent Systems and Computing*, Springer, Cham, pp. 1145-1156, 2019.

U. Sarfraz, S. Zeadally, and M. Alam, "Outsourcing IOTA Proof-of-Work to Volunteer Public Devices," Security and Privacy, 2019.

Conference Presentations

U. Sarfraz, "DLT, IOTA and beyond," Higher Education Commission (HEC) Lecture Hall, Islamabad, 2017.

Projects	*Firefly*	Live GitHub

Firefly   Live GitHub
TypeScript, Rust, Svelte, Electron, Capacitor
- Official wallet for managing IOTA cryptocurrency payments.

Trinity   Live GitHub
JavaScript, React, Electron, React Native
- (Old) Official wallet for managing IOTA cryptocurrency payments. Deprecated in favour of Firefly (considering major network upgrades).

Selv   Live GitHub
TypeScript, Svelte, Capacitor
- A wallet application for managing self sovereign digital identities.

Iota.JS   GitHub
TypeScript
- Official JavaScript library for IOTA cryptocurrency.

Resocket   GitHub
JavaScript
- Web sockets wrapper and middleware for React-Redux applications.

SELinux MLS   GitHub
JavaScript
- Tool for automating SELinux configuration for Multi-Level Security (MLS) over Secure Shell (SSH).

Tangle Archive   GitHub
Python
- Tool for compiling historical data of the IOTA Tangle in CassandraDB.

CLI Wallet   GitHub
Python
- A python based command line Wallet for IOTA.

Instagram Daemon   GitHub
JavaScript
- A small script for notifying on slack if there is any activity on Instagram threads.

Community Service   Active blood donor at Pakistan Red Crescent Society (PRCS)

Extra-Curricular Activities

College basketball team, *Captain*	August 2010 - May 2011
University basketball team, *Captain*	September 2015 - June 2016
Association of Computing Machinery (ACM), *Member*	January 2016 - May 2016

Languages

Urdu	Native
English	Fluent
Punjabi	Proficient
German	Beginner