

Umair Sarfraz

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 13187, Berlin

Education	Master of Science, Information Security. Comsats University, Islamabad.	Fall 2018
	Bachelor of Science, Software Engineering. Comsats University, Islamabad.	Spring 2016
Experience	Scientific Researcher DAI-Labor der Technische Universität Berlin	September 2022 - Present
	<ul style="list-style-type: none">Leading development of simulation / show case applications for the <u>BeIntelli</u> research project.	
	Technical Lead IOTA Foundation, Berlin	January 2021 - August 2022
	<ul style="list-style-type: none">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 (<i>Firefly</i>) 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 IOTA Foundation, Berlin	February 2018 - December 2020
	<ul style="list-style-type: none">Designed and developed a wallet (<i>Trinity</i>) for managing IOTA payments using React/React Native/Electron.Developed a proof-of-concept mobile application <i>Selv</i> 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 Wanclouds Inc., Islamabad	July 2016 - January 2018
	<ul style="list-style-type: none">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 Kernel Extreme Learning 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	<i>Firefly</i>	Live GitHub
	TypeScript, Rust, Svelte, Electron, Capacitor	
	<ul style="list-style-type: none"> • Official wallet for managing IOTA cryptocurrency payments. 	
	<i>Trinity</i>	Live GitHub
	JavaScript, React, Electron, React Native	
	<ul style="list-style-type: none"> • (Old) Official wallet for managing IOTA cryptocurrency payments. Deprecated in favour of Firefly (considering major network upgrades). 	
	<i>Wallet Library (NodeJS bindings)</i>	GitHub
	TypeScript	
	<ul style="list-style-type: none"> • Official wallet library for IOTA cryptocurrency used by several crypto exchanges. 	
	<i>Tangle Explorer</i>	Live GitHub
	TypeScript	
	<ul style="list-style-type: none"> • Tool to search through data recorded on the IOTA ledger. 	
	<i>Selv</i>	Live GitHub
	TypeScript, Svelte, Capacitor	
	<ul style="list-style-type: none"> • A wallet application for managing self sovereign digital identities. 	
	<i>Iota.JS</i>	GitHub
	TypeScript	
	<ul style="list-style-type: none"> • Official JavaScript library for IOTA cryptocurrency. 	
	<i>SELinux MLS</i>	GitHub
	JavaScript	
	<ul style="list-style-type: none"> • Tool for automating SELinux configuration for Multi-Level Security (MLS) over Secure Shell (SSH). 	
	<i>CLI Wallet</i>	GitHub
	Python	
	<ul style="list-style-type: none"> • A python based command line Wallet for IOTA. 	
	<i>Instagram Daemon</i>	GitHub
	JavaScript	
	<ul style="list-style-type: none"> • 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, <i>Captain</i>	August 2010 - May 2011
	University basketball team, <i>Captain</i>	September 2015 - June 2016
	Association of Computing Machinery (ACM), <i>Member</i>	January 2016 - May 2016

Languages	Urdu	Native
	English	Fluent
	Punjabi	Proficient
	German	Beginner