Tushar Shrivastav

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Education

Santa Clara University — Santa Clara, CA
Bachelor of Science in Computer Science — *Sep. 2021 – Jun. 2024*

- Cum. GPA: **3.8/4.0** & Emphasis in Software
- Coursework: Data Structures, Discrete Math, Embedded Systems, Logic Design, OOP, Prob & Stat I, Theory of Algorithms, Linear Algebra, Programming Languages, Automata & Languages, Computer Networks, Design/Management of Software

Experience

Undergraduate Researcher — May 2023 – Present
Santa Clara University — *Santa Clara, CA*

- Machine Learning for Ransomware Detection with Dr. Sean Choi
- Training multiple models, such as XGBoost, Neural Network, and Naive Bayes to detect Ransomware from a dataset with 30,000+ features and 1,500+ samples

Computer Science Teaching Assistant — April 2023 – Present
Santa Clara University — *Santa Clara, CA*

- Assist in holding labs & grading of the following computer science courses in Python & C++:
  - CSCI 61 - Data Structures
  - CSCI 60 - Object-Oriented Programming
  - CSCI 10 - Introduction to Computer Science

Co-op Software Engineer — June 2022 – February 2023
Realtor.com | Node.js, React.js, JavaScript, TypeScript, Next.js — *Santa Clara, CA*

- Improving security of APIs utilizing **OAuth 2.0** & **Cryptography** by building service for client authentication
- Created technical documentation for API Auth detailing modified **PKCE flow** with cryptographic Proof of Work
- Implemented custom frontend **NPM package** to utilize in APIs to be authenticated with backend service
- Tested validation performance of popular **node.js JWT** Libraries leading to **50%** increase in performance
- Created graphs for logging data for API Authentication service in **Splunk** using RegEx
- Responded to Security Incidents utilizing **AWS Cloudformation** templates

Researcher — Sep. 2021 – Present
EPIC IoT | C/C++, Arduino, Node.js, Svelte, Ruby on Rails, Typescript, Postgres, GraphQL — *Santa Clara, CA*

- Building out **Web Dashboard** for various Agricultural IoT Devices such as DOxy, Hydration Automation, & AB.
- Creating **IoT Data pipeline** to send/receive data from devices and IoT Web Dashboard
- Created **ML Regression model** on samples of Infrared sensor data versus real Dissolved Oxygen percentage
- Implemented AB energy-aware **networking protocol** to send sensing data to bay-station for DOxy & HA
- Created **WiFi communication** for T2 Whispernodes to relay sensing data to Web Dashboard using ESP8266-01

Publications

DOxy 2.0 (Pending Publication) in MDPI Sensor Networks Journal

Projects

imagepro | *Rust* — 2023

- Open-source Rust CLI tool that provides various image processing actions: Resize, Collage, Crop, Rotation, etc.

AlohaWare | *C++, Vulkan* — 2022

- Developing open source RPG maker engine to learn engine development along with **Vulkan Graphics APIs**

Puck | *Rust, Java, Kotlin, React.js, Typescript, SQLite, Axum* — 2022

- Building out self-hosted desktop media server application for manga/comic books to share your media
- Implementing multi-platform interface allowing users to organize files using comic/manga metadata APIs

Shell Eco-Marathon | *C, C++* — 2021

- Led a team that built a prototype electric car that **placed 11th in Americas and 56th in the World**
- Used TI Piccolo microcontroller & C2000 InstaSPIN libs to program a BLDC Sensorless motor on the drive train
- Instrumental in **raising corporate funding of $12.5k**

Technical Skills

Languages: Python, C/C++, SQL (Postgres, SQLite), JavaScript, Typescript, Go, HTML/CSS, JSON, Bash, Kotlin, Rust, Assembly
Frameworks: React.js, Next.js, Node.js, Svelte, Ruby on Rails, Express.js, MongoDB, HyperLedger Fabric, Axum
Graphics: Vulkan, GLSL, WebGL