Jeremy Mark Tubongbanua

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Education

University of Ontario Institute of Technology Sep. 2021 – Apr. 2025
Bachelor of Engineering, Software Engineering (cGPA: 3.88) *Oshawa, ON*

- Vice President of Communications for OTU Computer Science Club (Apr. 2023 – Apr. 2024), responsible for internal/external communications, sponsorship acquisition, assisting in organizing career-building workshops and events
- Relevant coursework: Systems Programming, Software Design and Architecture, Data Management Systems, Design and Analysis of Algorithms, Computer Networks, Introduction to AI, Operating Systems, Software Quality, Software and Computer Security, Embedded Systems, and Machine Learning

Work Experience

Software Engineer (Contract Part-Time) Aug. 2022 – Present
Atsign *San Jose, CA*

- Lead C developer overseeing the design, development, and maintenance of multiple SDKs used across Atsign products, ensuring secure IoT communication and edge encryption between networking devices used in real customer environments
- Represented Atsign at CES 2024 and Embedded World 2024, collaborating with the Qt Company to develop and showcase innovative IoT demos, including a smart IoT plant and an automated beverage dispenser
- Actively contribute to cross-functional team communication, providing technical support to marketing, assisting with intern mentorship and recruitment, and participating in daily stand-up meetings

Technology Intern Jun. 2022 – Jul. 2022
Atsign *San Jose, CA*

- Implemented CRAM authentication and CRUD operations in Java version of company SDK
- Led a complete revamp of the developer website using HTML, CSS, and JavaScript; utilized the Hugo framework to create a standardized structure for developer documentation, making it easier for technical writers to add new content uniformly to the site
- Facilitated a YouTube initiative with five other interns; took ownership of the YouTube channel and published educational content

Vice President of Communications Apr. 2023 – Apr. 2024
Ontario Tech University Computer Science Club *Oshawa, ON*

- Led internal and external communications, managed sponsorship acquisition, and coordinated career-building workshops and events for the club

Volunteer Experience

FIRST Robotics Judge Advisor and Mentor Jun. 2020 – Jan. 2024
FRC 5596 Wolverines Team *Toronto, ON*

- Volunteered as Regional Judge Advisor for the Mary Ward FIRST Lego League Qualifier and as Provincial Judge for Ontario West/East FIRST Lego League and FIRST Tech Challenge provincials, supervising up to 16 adult volunteers and judging elementary and high school robotics teams for two consecutive years
- Mentored grade 9-12 FRC students in Java Basics, Robotics programming, and WPI Lib Control fundamentals, leading weekly workshops over four months and providing guidance to up to 10 students

Cpp North Volunteer Jul. 2023
CppNorth *Toronto, ON*

- Created and presented my own lightning talk on my experiences with carpal tunnel syndrome as a programmer with 50+ live attendees
- Volunteered in set up, tear down, and as a camera volunteer and time keeper for the full duration of the three-day long conference

Projects

Atsign C SDK | *C, CMake, IoT, Cryptography, Networking, Cross-Platform Development* Sep. 2024

- Lead developer of the C SDK, enabling secure IoT communication for devices in lower-level constrained environments
- Developed core AES-256 and RSA-2048 cryptographic implementations, end-to-end encryption, and atProtocol operations in C99 using MbedTLS, Espressif-IDF, and CMake
- Successfully used SDK as a core dependency for the NoPorts product, enabling remote access for lower-level operating systems like OpenWRT without exposing open port vulnerabilities, where SDK was used in real customer settings

Atsign NoPorts C Daemon | *C, CMake, Cryptography, Networking* Sep. 2024

- Developed C Daemon software, enhancing the user experience for customers seeking a frictionless security solution while retaining their existing remote access setups
- Developed initial SSH NoPorts Docker end-to-end regression tests that simulated and tested the full NoPorts handshake between two Docker containers without opening any external ports
- Enhanced software stability and security by ensuring NoPorts operates without traditional port exposure, over long durations, and is free from memory leaks, utilizing tools like Valgrind and AddressSanitizer

jeremymark.ca | *Node.js, React, Tailwind, Docker, Linux* Sep. 2024

- Designed and developed personal portfolio website in React and Tailwind CSS, featuring project/experience filtering, integration with the Spotify API, and a custom framework for easily adding and displaying new content
- Deployed on a Linux VPS using Docker Compose with three containers: one for the React web app, one for the Spotify API (on the subdomain spotify.jeremymark.ca), and an Nginx service for traffic routing, with SSL certificates for secure HTTPS access

connect.py | *Python, Docker, Linux, Networking* Sep. 2024

- Developed a Python script that enables secure remote access to a Jetson Nano Linux device without exposing any open ports in an air-gapped environment, submitted to Hack The North 2024's Communications Security Establishment air-gapped environment API challenge
- Implemented functionality to reconnect to the Internet after downtime; the script defaults to using the local network for secure remote access via a relay point, ensuring continued operation even with no open ports

Custom Garbage Holder | *Fusion 360, 3D Printing* Aug. 2024

- Created a custom garbage holder that attaches to a drawer door to hold a plastic bag for kitchen trash
- Designed and 3D printed the holder, ensuring it fits perfectly on the kitchen drawer with durable material

Custom Inhaler Case | *Fusion 360, 3D Printing* Aug. 2024

- Designed a custom asthma inhaler case with embedded 6x2mm magnets to allow easy access and protection of the inhaler
- Utilized Fusion 360 to create a perfect-fit model and printed it using durable, flexible material for everyday use

Creality K1 Mods | *Fusion 360, 3D Printing* Aug. 2024

- Added 18+ mods to personal Creality K1 3D printer, improving performance, stability, and functionality
- Customized existing mods and created new mods to satisfy specific requirements for 3D printing projects

codecraft.io | *Docker, React, Tailwind, AI/ML, Nginx* Aug. 2024

- Developed and deployed a code learning platform that provides real-time coding assistance for users, leveraging Wolfram AI/ML. Source code can be found on GitHub
- Implemented a backend API that connects to a Docker containerized code-building service, which compiles and executes user-submitted code from the platform's interface

WeeklyWardrobe | *Node.js, React, Tailwind, Docker, CI/CD* May. 2024

- Developed and deployed a web application that allows users to subscribe to a service where they can borrow and try on clothing for a week, rate their experience, and receive personalized clothing, submitted to HawkHacks 2024 (University of Waterloo In-Person Hackathon) YouTube demo
- Implemented a Node.js Express backend API to service the front-end application, and implemented a full DevOps CI/CD pipeline using GitHub Actions and Docker for deployment on a Linux VPS, source code on GitHub

Qt/Atsign IoT Plant Demo | *Python, Qt (Python), Fusion360, Linux, Robotics, 3D Printing* Jan. 2024

- Closely involved in joint partnership between Atsign and Qt, where project was selected to be displayed at CES 2024 in Las Vegas as a demo at the Qt Company's booth, showcased to 138k+ attendees
- Designed and developed a smart IoT plant with 4 sensors and 1 actuator that can be remotely and securely controlled using Atsign's secure networking technology and Qt's rich user interface

Atsign ESP32 SDK | *C++, IoT, Cryptography, MbedTLS* Jun. 2023

- Lead developer of the C++ ESP32 Arduino SDK, enabling ESP32 Arduino developers to utilize the atProtocol for secure IoT communication via edge encryption
- Developed core AES-256 and RSA-2048 cryptographic implementations, end-to-end encryption, and atProtocol operations in C++ using Arduino IoT Development Framework
- Library was successfully used as a core dependency in UMass Boston's 2022/2023 Computer Science final projects, utilized by 125 students

at_java | *Java, Maven, IoT, Cryptography* Apr. 2023

- Designed and developed client SDK which is the core implementation of the atProtocol written in Java
- Developed `toString()` functions for the `AtKey` class and REPL application that involved directly interacting with the atProtocol with encryption support
- Implemented CRAM authentication involving authentication with an RSA public-private key pair, utilizing cryptography functions implemented in Java

Split | *Java, Networking, Cryptography, Distributed Systems* Mar. 2023

- Developed a rudimentary Distributed Systems application that split an image into partitions, conducted image processing on various servers, and later pieced it back together
- Implemented cryptography concepts such as edge AES encryption and end-to-end encryption, ensuring that the application was fully secure end-to-end
- Written in Java and presented to a judge panel of 6 professionals at a University engineering demo event

Twitch IoT Plant | *Node.js, Raspberry Pi, Robotics* May. 2021

- Designed and developed a smart automated IoT plant system that can be watered by Twitch viewers in real-time based on events like follows, subscriptions, and donations
- Utilized a Raspberry Pi Zero running a Node.js web server to control a DC water pump, triggered by API requests from a secondary web server that listens for Twitch event interactions
- Showcased the project in action during a live stream here

FRC 2020 Robot | *Java, Robotics* May. 2020

- Designed and developed a six-ball autonomous function that scored six points within fifteen seconds using techniques like PID control, motion profiling, and OpenCV vision, written in Java
- Developed a software solution to overcome a mechanical issue with the Intake Subsystem by cascading the balls in an orderly fashion using 7 ball point sensors; wrote 1.5k lines of code to track ball positions, count the balls, and decrement the counter when balls were ejected

Timber | *Spigot API, Java, Maven* Apr. 2019

- Developed and deployed Minecraft plugin published on SpigotMC allowing trees to be broken in one break, using recursive principles
- Achieved a peak of 15 concurrent servers using the plugin and 2.5k+ downloads