Sean Stappas

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Work Experience

MICROSOFT Software Engineer II

Redmond, WA | *May 2021 – Present*

Singularity Azure AI Infrastructure – Azure Core Compute

Singularity is a scalable, performant, robust, and cost-effective distributed AI infrastructure, purpose-built for mission-critical AI workloads.

- Led the development, operationalization and deployment of a **monitoring tool** used to track our production fleet. This tool is used daily by team members and on-call engineers looking to diagnose and mitigate issues in our clusters.
- Driving an effort to transition the team's **deployment** engine away from ad-hoc PowerShell scripts and towards managed **C#** control plane code. This will allow for finer grain control and better monitoring of our production Azure deployments.

MICROSOFT Software Engineer II

Redmond, WA | *Mar. 2021 – May 2021*

Azure Hardware Datacenter Manager (DCM) – Azure Core Compute

- Led an effort to enhance production synthetic tests to act as **deployment watchdogs** to prevent regressions.

MICROSOFT Software Engineer

Redmond, WA | *Sep. 2018 – Mar. 2021*

Azure Hardware Datacenter Manager (DCM) – Azure Core Compute

DCM manages the bootstrap, life-cycle, inventory, operations and credentials of the millions of hardware devices in Azure. This hardware is used to provide low-cost compute to customers with high availability and fast performance guarantees.

- **Designed** and implemented a scalable, highly available and low latency streaming **hardware inventory pipeline** using Apache **Kafka** to replace a legacy batch pipeline. Hardware data from the entire Azure data plane and control plane inventory of **3 million machines** is propagated, processed and available to internal customers using Kusto (Azure Data Explorer) in seconds instead of days.
- Created **automated deployment pipeline** using **Azure DevOps**, deploying to pre-production environments every day, with health checks gating production rollouts. This allowed for team members to test their changes much more quickly, while not compromising on availability.
- Created internal user-friendly **website** for datacenter technicians using **Nancy** in **C#**, reducing the on-call burden for the engineers on the team to manually update MAC addresses of Azure host machines.
- **Mentored** and on-boarded multiple new hires on the team by creating a "New Hire" setup wiki.
- Managed **security incidents** for the team, such as GDPR compliance, TLS 1.2 adoption, audits and security/privacy reviews.
- Wrote extensive tests on all code using the **Moq** mocking library alongside the **Autofac** dependency injection library.

AMAZON Software Development Engineer Intern

Vancouver, BC | *Jun. 2017 – Aug. 2017*

Unified Subledger Team (USL-C)

- Added support for a **group by** clause and **aggregate functions** (sum, average, count, etc.) in an **SQL**-like domain language used to query subledger data from **DynamoDB** and **S3.** This made it easier for developers and accountants to aggregate financial data.
- Parallelized the above queries by using **MapReduce** with the Apache **Spark Java** library, increasing their speed and efficiency.
- Created **JUnit** unit tests with **Mockito** mocking and **Guice** dependency injection, covering **95%** of the project.

TACTIO HEALTH GROUP Digital Health Software Developer Intern

Montreal, QC | *May 2016 – Aug. 2016*

- Created a **PHP** mock data generator with daily **Cron** jobs and a producer-consumer queue in **MySQL**, allowing for more realistic simulation of patients with various medical conditions.
- Developed a **PHP** testing framework covering **60%** of the back-end API, leading to increased bug detection before deployment.

JNPSOFT Java Developer

Montreal, QC | *May 2015 – Aug. 2015*

- Made importing of car parts data from Excel to an **SQL** database over **300 times** faster by implementing a bulk import in **Java.**
- Practiced test-driven development (**TDD**) with **TestNG**, leading to safe and reusable code.

Education

McGill University Bachelor of Engineering (Honours Electrical)

Montreal, QC | *Sep. 2014 – May 2018*

- GPA: 4.0

Marianopolis College Diploma of Collegial Studies (Pure and Applied Sciences)

Montreal, QC | *Sep. 2012 – Jun. 2014*

- R Score: 35.757

Projects

Microprocessor Systems Project Android & Cloud Developer
Jan. 2018 – Apr. 2018
- Created an **Android** app to process accelerometer data as well as transcribe microphone audio via the **Google Cloud Speech API**.

Artificial Neural Network Developer
Sep. 2017 – Dec. 2017
- Created a fully connected **artificial neural network** from scratch using **NumPy** with a teammate.
- Identified handwritten digits after supervised back-propagation learning with an accuracy of **98.1%**.

Qbert Game AI Agent Developer
Sep. 2017 – Dec. 2017
- Created an autonomous agent capable of playing the **Qbert** game on the open-source **Arcade Learning Environment**.
- Used reinforcement **Q-learning** with various generalization and exploration methods.
- Achieved **2nd place** in the tournament showcasing all the agents in the class.

Connect-Four AI Agent Developer
Sep. 2017 – Dec. 2017
- Created an agent capable of playing a competitive **Connect-Four** game with an opponent as part of the **ECSE 526** course.
- Used **minimax** search with **alpha-beta** pruning and various heuristics to predict the most advantageous moves to take.
- Achieved **2nd place** in the tournament showcasing all the agents in the class.

TLDR News App Lead Developer
Jan. 2017 – Dec. 2017
- Created **iOS** and **Android** apps powered by **AWS** providing personalized daily summaries of the latest news as part of the **BUSA 465** course.
- Participated in the Fall 2017 startup validation program at the **District 3** innovation center with a partner.

Prometheus AI Honours Thesis
Jan. 2017 – Dec. 2017
- Created the Expert System and Knowledge Node Network **Java** layers of Prometheus AI, whose goal is to control multiple robots.
- Supervised and guided two volunteers in the lab over the summer to help expand the functionality of the system.

Flatmate App Lead Developer
Sep. 2016 – Feb. 2017
- Created an **Android** app powered by **Firebase** to help like-minded individuals find roommates and apartments.
- Participated in the 2017 semi-finals of the **McGill Dobson Cup** with two business partners.

Breakout Game Developer
Sep. 2016 – Dec. 2016
- Created a **Breakout** game in **VHDL** with unique levels and powerups on the Altera Cyclone II **FPGA** with an external RGB display.

McGill Robotics Drone Team Member
Sep. 2015 – May 2016
- Created two-player Connect-Four game using **Arduino**, 70 LEDs, shift registers and a Redboard microcontroller as a mini-project.

Robot Competition Project Manager, Java Developer
Jan. 2015 – Apr. 2015
- Designed an autonomous **robot** with ultrasonic and light sensors capable of navigating a map and launching balls at targets.
- Implemented obstacle avoidance, moving-average, and differential filtering algorithms in **Java.**

Awards & Scholarships

Ernest Brown Gold Medal	2018	J. B. Woodyatt Scholarship	*2015*
McGill University Dean's Honour List	*2015 – 2018*	John Howard Ambrose Scholarship	*2015*
Ralph M. Collins & Ruth G. Collins Scholarship	*2017*	J. W. McConnell Scholarship	*2014*
Beverly and Arthur Mendel Family Scholarships	*2016*	*Marianopolis College Dean's List*	*2014*
NSERC Experience Award	*2016*	*Marianopolis College Honour Roll*	*2014*
Mary Gilsig Scholarship	*2015, 2016*	*Marianopolis College Scholar*	*2014*

Technical Skills

Programming Languages: Java, Python, C#, C++, C, PowerShell, PHP, Swift, Objective-C, Ruby, Arduino, VHDL, SQL, MIPS Assembly, LaTeX
IDEs & Editors: Visual Studio, Eclipse, Android Studio, IntelliJ IDEA, PyCharm, Xcode, VS Code, Sublime Text, vim, Arduino, IDLE
Databases: Cosmos DB, MySQL, DynamoDB, Firebase, MS SQL Server, MS Access
Operating Systems: Windows, macOS, Ubuntu, CentOS