Brendan R. Fallon

| Links | Website | LinkedIn |
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Summary Statement: M.Eng. candidate working on video game NPC emotion generation. Experience in game programming, tools development, NPC algorithms, C++, Unity, C#, and Python. Passionate about empowering game developers with the right tools.

Highlights of Qualifications

- **Great communication** & **soft skills** through research, team leadership, and work experience.
- **Self-directed**, asks questions, a **quick learner** in the face of a steep learning curve.
- Adept in **game tools development** in **C/C++** (2yrs), **C#** (3yrs), **Unity** (3yrs), and **Python** (9yrs).

EDUCATION

Master of Engineering, Computing and Software — Sept. 2020 – Dec. 2023(est.)

McMaster University – Hamilton, ON

- Computer science and software engineering, focusing on **game tools software**.
- Thesis **generating emotions** for NPCs in **Unity** via an **emotion engine API**.
- Supplemented **physics background** with software and computer science courses.

Bachelor of Engineering & Society Co-op, Engineering Physics — Sept. 2014 – April 2019

McMaster University – Hamilton, ON

- **Multidisciplinary program** covering physics, electrical, materials, and mechatronic engineering.
- **Well-rounded** with eng. society program focusing on sustainability and a **minor in CS/robotics.**
- **Professional experience** through four co-op terms at engineering companies.

EXTRACURRICULARS & PROJECTS

- 2023 GMTK Game Jam – Big Boss Dungeon - Role reversal dungeon crawler in Unity. July 2023
- Rune Finder – Minesweeper-like solving tool using **MS PowerPoint** shape unions. March 2023
- NPC Racer – Comparison of **NPC pathfinding** algorithms such as Dijkstra/**A*** in **C++**. Dec.2022
  - Utilized **Doxygen** docstrings, custom mazes, **terminal** program, and **efficient C++**.
- Game Design Jams – Course on design, programming, and development in Unity. April. 2022
- LiCS President – Social club for CS department coffee, board games, and AI seminars. 2021-2022
- NEUDOSE Satellite Tool Dev. - monitoring app using **Electron**, **React**, **JS/TS.** May – Sept. 2022
- MDE for NPC creation in **Eclipse EMF** and **domain-specific language** for IF parsers. April 2022
- 30-minute **Ted-style talk** on game engines, hardware acceleration, and ray tracing. Feb. 2020
- EPTA – Passion project **standalone terminal** text adventure game made in **Python 3**. 2018 - 2019
  - Feature-rich quests, events, coloured display, saving/loading, and **recursive gameplay**.
  - Custom engine and Infocom parser which **improve user speed by 70%**.
  - **Open-source** 10 k LOC, **best practices** PEP8, and reached 1500 people.
- Eclipse Capstone – Automatic Light Blocking Windshield Sept. 2018 – May 2019
  - **Python OpenCV** light & eye detection image processing into a **multithreaded** Raspberry Pi.
  - **Innovative Design Awards:** 1st place MEC, 2nd place OEC, and 4th place CEC.
- Rocketry Captain – Led 20 students, designed N class 10,000-foot rocket for IREC. 2016 –2019

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WORK EXPERIENCE

CAS M.Eng. Candidate
Sept. 2020 – Dec. 2023(est.)

McMaster University – Hamilton, ON

- Working under Dr. Carette and Dr. Smith as my supervisors in the McMaster G-ScalE Lab.
- Utilizing **C# emotion engine library** API (EMgine) to do integration testing in **Unity**.
- Created Joy emotion prototype which **identified 5 issues** of correctness and accuracy which I **filed as Gitlab bug reports** for my supervisor.
- Reviewed features of current engines to create "researchable video game engine criteria".
- Reviewed cognitive agent systems and created criteria for EMgine integration.
- Reviewed NPC algorithms and software engineering methodologies including software licenses, requirements documentation, and testing methodologies.
- Learned about **academic writing**, **research skills**, paper reading, **MS Word**, and **Tex/LaTex**.

Teaching Assistant, Software Capstone, Quantum Programming
Sept. 2020 – Dec. 2022

McMaster University – Hamilton, ON

- Led tutorials, created rubrics, and evaluated students' projects, assignments, and tests.
- **Taught & reviewed code** in technologies including **Unity**, **JavaScript**, **Python, C++, C#, quantum programming, machine learning**, and **blockchain**.

Operations Engineering, Optics Specialist
May 2019 – June 2020

L3 Harris Wescam - Burlington, ON

- Working as an **off-shift weekend manufacturing optics support** for issues on aerospace-grade gyro-stabilized electro-optical imaging and laser designating systems.
- **Learned** complicated products & processe**s quickly** to become capable in **6 months**.
- Strengthened **problem-solving skills** while troubleshooting manufacturing systems and automated testing problems **under pressure.**
- Used **communication skills** to integrate into a **remote multidisciplinary** team, collaboratively worked with technicians on the line, and authored manufacturing documents effectively.
- **Worked unsupported** on weekends & **self-started** to solve automated setup issues in **C#**.
- Training on **lean methodologies**, Kanban, 5S, and 8D root cause assessment.
- Produced a **record number of systems** during high-stress periods to help show **work ethic.**

Summary of SKILLS

Software Theoretical

- Game design, NPC algorithms
- Programming languages, functional programming, metaprogramming
- Compilers & syntax-based tools
- Model-driven engineering, EMF
- HCI and user testing
- Requirements documentation

Software Practical

- Extremely proficient in Python (9yrs), C# (3yrs), Unity (3yrs), C++ (2yrs), Git/Github revision control (5yrs), Markdown (3yrs), MS Suite -Word Excel PowerPoint (10+yrs)
- Adept in JavaScript, VBA, Matlab, Java, Assembly, Haskell, Agda
- Atlassian Jira and Confluence, Google Suite