Suyash Khanna

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Education

University Of New South Wales **February 2026 – December 2026**
Bachelor of Computer Science (Honours) *Sydney, New South Wales*

University Of Adelaide **March. 2021 – December 2023**
Bachelor of Computer Science *Adelaide, South Australia*

Experience

BAE Systems **February 2024 – Present**
Graduate Software Engineer *Adelaide, South Australia*

- Refactored internal automation tools by converting BASH scripts to Python and introducing multi-threading, reducing overall execution time by over **50–60%**.
- Investigated and profiled C++ performance bottlenecks, identifying excessive CPU usage and inefficient memory access patterns, leading to measurable reductions in system load.
- Researched and compared backend frameworks including **Python, Java, and Node.js** to support architectural decisions for a new product development initiative.

International Research Laboratory Crossing (IRL CROSSING) **March 2023 – July 2023**
AI Researcher Intern *Adelaide, South Australia*

- Enhanced a policy-gradient reward function design, improving learning efficiency and cooperative task performance by up to **25%** in controlled simulation environments.
- Designed, implemented, and evaluated multi-agent reinforcement learning models using **Python, PyTorch, TensorFlow, and OpenAI Gym** to simulate complex, distributed human–agent interaction scenarios.
- Collaborated with PhD researchers in psychology and robotics to analyse learning dynamics and emergent behaviours in human–robot, multi-agent systems.
- Conducted iterative experimentation and hyperparameter tuning to improve convergence stability, cooperation, and adaptability of autonomous agents.

Welkin Web Solutions **April 2022 –July 2022**
Software Engineer Intern *Adelaide, South Australia*

- Assisted in the development of responsive front-end interfaces using HTML5, CSS3, JavaScript, and Vue.js for both web and mobile platforms.
- Tested, debugged, and optimized front-end performance across different browsers and screen sizes .
- Designing database schema to identify potential efficiency flaws and factored in scalability.

Projects

Pong Game | *C++, Raylib* **August 2025**

- Developed a fully functional Pong game in **C++** using the **Raylib** graphics library, implementing real-time rendering and collision detection.
- Programmed game physics including ball dynamics, paddle movement, wall collisions, and score tracking.
- Improved gameplay experience by adding keyboard controls, increasing difficulty scaling, and optimizing frame-rate performance.

Sand Simulator | *Python, Pygame* **June 2025**

- Built an interactive 2D sand simulation in **Python** using **Pygame** to model gravity, particle movement, and material behaviour.
- Implemented cellular automata-style logic to simulate realistic interactions between sand particles and obstacles.
- Optimized update loops and rendering techniques to support thousands of particles in real time.

Nand2Tetris | *HDL, Assembly* **August 2023**

- Built a complete computer system from basic logic gates up to a working CPU and assembler following the **Nand2Tetris** curriculum.
- Designed and implemented chips in **HDL** including multiplexers, ALU, registers, RAM, and a fully functional CPU.
- Wrote low-level programs in **assembly language** to run on the custom-built hardware platform.

Technical Skills

Languages: C++ 17 (fluent), Python 3.14(proficient), C 99(proficient), GoLang (personal project experience)
Developer Tools: VS Studio, VS Code, QT Creator, GDB
Technologies/Frameworks: Git, Linux, NodeJs