Sepehr Lavasani

Address: 9837, 110 St, NW Edmonton

Mobile: +1 5879385840

Email: sepehr3@ualberta.ca

[Linkedin](#)

[Personal Website](#)

HIGHLIGHTS OF SKILLS

◇ Research specialization in heuristic search and pathfinding in games.

◇ Accumulated over 6 years of proficient experience in game and tool development using C# within the Unity game engine.

◇ Proficient in C++ programming with a focus on implementing pathfinding algorithms and efficient data structures.

EDUCATION

◇ **University of Alberta**, Edmonton, Canada   2021 - Present
M.Sc. in Computing Science

Under the supervision of Nathan Sturtevant on Suboptimal Pathfinding

◇ **Shahid Beheshti University**, Tehran, Iran   2015 - 2020
B.Sc. in Computer Engineering, Major: Computer Architecture

Cumulative GPA: 3.71/4

Last two years GPA: 3.85/4

NOTABLE PROJECTS

◇ **Academic Projects**

- **Suboptimal Bidirectional Pathfinding**   Ongoing
  Supervised by **Nathan Sturtevant**.

  – Developed an innovative unbounded suboptimal heuristic search framework known as Anchor Search.

  – Implemented several concrete anchor search algorithms in C++ that demonstrated exceptional performance on industry-standard benchmarks, including maps from popular games such as **Warcraft 3**, **Starcraft 1**, and **Dragon Age: Origins** (**a paper on this research is currently under review at AAAI 2024**).

  – Introduced a novel front-to-front heuristic grounded in the concept of pattern databases (PDBs).

- **Improving Optimization Algorithms Using Game with a Purpose**   Jun 2019
  Supervised by **Mojtaba Vahidi-Asl**.

  – Designed and implemented a GWAP (Game with a Purpose) using the Unity game engine.

  – Incorporated human prior knowledge as a heuristic function to enhance blind optimization algorithms.

  – Designed and implemented an evolutionary algorithm to solve variations of the Facility Location Problem (FLP) as a case study.

◇ **Personal Projects**

- **Fast FlowField**
  Engineered a specialized suboptimal flowfield to facilitate rapid and efficient group pathfinding.

- **OmniGrid**
  A Unity toolbox that facilitates the development of grid-based Real-Time Strategy (RTS) games.

- **CamDirector**
  Designed and crafted a responsive camera control tool within the Unity game engine, offering dynamic adjustments that respond to the main character's orientation based on the level designer's preference.

- **Cardify**
  Developed an event-driven framework within the Unity game engine, specifically tailored for creation of card games.
- **Extended Quadtree Implementation**
  Designed and implemented a C++ extension of quadtrees, extending their capabilities into higher dimensions to optimize the retrieval of nearest states in puzzle-solving scenarios.
- **Game Prototypes**
  Find some of them in my portfolio.

INTERESTS	⋄ AI in Games
	⋄ Game Programming
	⋄ Game Design
	⋄ Serious Game and GWAP(Game With a Purpose)

WORK EXPERIENCE

⋄ **Programmer and Project Manager**   Nov 2018 - Apr 2020
NTBG Game Studio, Iran

- Worked as Gameplay Programmer, Tool Designer and Technical Artist

⋄ **Senior Member of SBU GameLab**   2016 - 2020
Shahid Beheshti University, Iran

- Worked as a programmer on two academic psychological GWAP projects.

PROFESSIONAL DEVELOPMENT AND TRAINING

⋄ **Game Development Technical Workshops** (Shahid Beheshti University)

- Advanced Design Patterns for Video Games   Summer 2019
- Level Design Tool Development in the Unity Game Engine   Summer 2019
- Introduction to Game Development with the Unity Game Engine   Summer 2018

⋄ **Teaching Assistantship** (Shahid Beheshti University)

- TA of **Advanced Computer Programming**   Spring 2017
  Instructed by **Mojtaba Vahidi Asl**
- TA of **Introduction to Programming**   Fall 2016
  Instructed by **Monire Abdus**

TECHNICAL SKILLS

⋄ Programming Language: C#, C++, Python, Java
⋄ Development Tools: Unity Engine (proficient), Unreal Engine (familiar), MonoGame Framework (familiar)
⋄ Gameplay Prototyping
⋄ Game Architectures and Design Patterns

LANGUAGES

⋄ Persian (native)
⋄ English (fluent)

- *Duolingo English Test:* 130/160
- *IELTS:* 7.5

HOBBIES

⋄ Making video games
⋄ Playing video games
⋄ Listening to music