Amirali Ahangari

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Education

Bachelor of Industrial Engineering **Sept 2020 – Sept 2025**
Amirkabir University of Technology (Tehran Polytechnic) – GPA: 3.46/4.00 (16.46/20)

Research Interests

Computer Graphics, Game Programming, HCI, Engine Programming, Software Engineering, Game Design

Research Experience

Thesis: Development of an Educational Game Application for Children with Autism Spectrum Disorder
Amirkabir University of Technology GitHub Page

- Designed and developed a Unity-based educational game for enhancing cognitive, sensory, and social skills in children with ASD.

Publications

Solution Approaches in Disaster Management **In Preparation**
Co-authored with faculty members at Amirkabir University of Technology

- Conducted a comprehensive literature review on optimization models and algorithms in disaster management.
- Analyzed existing solution approaches for logistical challenges during disaster response.

Teaching Experience

Teaching Assistant, Algorithm Design **Sept 2023 – Sept 2024**
Amirkabir University of Technology

- Taught Object-Oriented Programming (OOP) and routing algorithms such as Dijkstra and A*.
- Assisted students in understanding algorithm optimization and design techniques.

Teaching Assistant, Gamification **Sept 2024 – December 2024**
Amirkabir University of Technology

- Conducted discussions on applying gamification techniques to learning and engagement platforms.
- Assisted in designing projects to implement gamification principles.

Professional Experience

Game Developer, Nasir Driving Simulator **Sept 2023 – Present**
Worked with Unreal Engine 5 for driving simulation projects. Nasir Driving Simulator

- Developed an interaction system for soil and excavator bucket using physics-based programming.
- Integrated FMOD for advanced audio control and Voxel Plugin for soil interaction.
- Implemented design patterns such as Singleton and SOLID principles.
- Utilized actor components for dump trucks and excavators for load charging/discharging.
- Created vehicle gauge displays using Unreal UI.
- Improved familiarity with shader programming, materials, and version control using Git.

Unity Developer, Dead Mage **Jan 2025 – Feb 2025**
Worked on the prototype of a 2D tile-based digging game. Dead Mage Steam Page

- Utilized Unity Tile Maps and the Grid System to implement the digging mechanics.
- Developed gameplay features to enhance player interaction and responsiveness.
- Optimized asset usage and tile-based rendering for performance efficiency.

Projects

3D Software Renderer (C + SDL2)
GitHub Page Video Link

- Built a real-time 3D renderer from scratch using C and SDL2, implementing a full rendering pipeline.

- Implemented camera systems, perspective projection, rasterization, and depth buffering manually.
- Developed support for mesh loading, wireframe and filled polygon rendering.
- Focused on low-level optimization and mathematical transformations without relying on external graphics libraries.

Third Person Adventure Game (Unreal Engine 5)
GitHub Page Video Link

- Implemented character animations including inverse kinematics, motion warping, and animation blueprints.
- Developed enemy AI using C++ and Blueprints.
- Used the Niagara system to create visual effects.
- Designed realistic environments using landscape editor and foliage tools.

Endless Runner Game (Unity)
GitHub Page Video Link Download Link

- Created a generative map with an isometric view for a 2D-to-3D game experience.
- Utilized design patterns such as Object Pooling and Singleton to optimize performance and resource management.
- Designed a responsive UI adaptable to various Android devices.

Galaga Clone Game (OpenGL)
GitHub Page Video Link

- Designed transformations using Model, View, and Projection matrices for accurate 3D rendering.
- Implemented collision detection for interactions between players and enemies.
- Created smooth animations and frame rendering for a polished gaming experience.
- Used VAOs, VBOs, and IBOs for efficient rendering of game elements.

Skills

- **Game Engines:** Unreal Engine 4/5, Unity
- **Programming Languages:** C++, C, C#, Python, SQL, Blueprint Visual Scripting
- **Graphics Libraries:** OpenGL
- **Machine Learning:** Concepts and implementation
- **Languages:** English (IELTS Academic – Score: 7.0), Persian

Relevant Courses

- Computer Programming
- Software Engineering
- Principles of Database Design
- Linear Algebra
- Algorithm Design Foundations
- Artificial Intelligence
- Data and Information Analysis
- Principles of Simulation
- Optimization I and II
- Numerical Analysis
- Calculus I and II
- Differential Equations
- General Physics I and II

Certifications

- **Information Systems** – Amirkabir University of Technology
- **International Symposium on Artificial Intelligence in Education, Research, Diagnosis and Treatment, Health Products, and Business** – National Institute of Genetic Engineering and Biotechnology
- **Machine Learning Specialization** – Coursera
- **Story and Narrative Development for Video Games** – Coursera
- **Learning How to Learn: Powerful mental tools to help you master tough subjects** – Coursera

Recommendations

- Amin Nikanjam, Research Associate at Polytechnique Montréal (amin.nikanjam@polymtl.ca)
- Ali Nahvi, Assistant Professor at K. N. Toosi University of Technology (nahvi@kntu.ac.ir)
- Marzieh Zarinbal, Assistant Professor at Amirkabir University of Technology (mzarinbal@aut.ac.ir)
- Roghaye Khasha, Assistant Professor at Amirkabir University of Technology (r.khasha@aut.ac.ir)

Activities & Hobbies

- Led the Amirkabir University Cinema Community
- Playing guitar and creating music