Hatem Almasri

hatem.almasri05@gmail.com +1 (780) 394-8116 Github Linkedin

EDUCATION

University of Alberta Edmonton, AB
Bachelor of Science with Specialization in Computer Science May 2027
Relevant Coursework: Foundations of Computing I / II – Programming Methodology (C) – Discrete Math and Computer Logic – Computer Architecture -- Algorithms I – Machine Learning.
Major GPA: 3.25

PROJECTS

Chatty

Live Chat Web Application (website)

- Designed and developed a fully responsive live chat application leveraging **Node.js** for backend functionality and **WebSockets** for real-time communication.
- Implemented robust database management using **MongoDB** to store user data, chat logs, and app configurations securely and efficiently.
- Created a dynamic theme system offering **32 customizable color themes**, enhancing user personalization and engagement
- Integrated advanced message features, allowing users to share **images and text as a single cohesive message**, improving communication flexibility.
- Prioritized maintainable code, scalable architecture, and optimized performance to deliver a high-quality user experience.

Flappy Bird AI Solver

AI python project

- Built the Flappy Bird game from scratch, including mechanics, graphics, and physics for realistic gameplay.
- Configured and trained an AI using the **NEAT-Python library** to autonomously solve the game by optimizing neural network topology through evolutionary algorithms.
- Fine-tuned hyperparameters and selection criteria to achieve optimal performance in navigating dynamic game environments.
- Demonstrated expertise in reinforcement learning, evolutionary algorithms, and real-time decision-making models.
- Delivered a project that combines game development and AI modeling, showcasing problem-solving and innovation.

3D Sphere Visualizer

C and *Mathematical Modeling project (view output)*

- Developed a C-based 3D sphere visualizer utilizing ray-tracing techniques to render spheres with realistic lighting, shadows, and reflections.
- Implemented algorithms to calculate sphere-ray intersections, light diffusion, and shading effects, enabling detailed and accurate visualizations.
- Created a dynamic animation generator that adjusts light positions over 90 frames, producing a 90 FPS video to illustrate changing light effects.
- Integrated anti-aliasing methods to enhance image quality by reducing jagged edges and improving visual smoothness.
- Designed a modular program architecture with efficient memory management and optimized algorithms to handle computationally intensive rendering tasks.
- Included advanced file I/O support to generate and process PPM image sequences for video creation, ensuring seamless output workflows.

SKILLS

- **Languages:** Python, C, JavaScript, Assembly (RISC-V)
- **Technologies:** Git, WebSockets, MongoDB, Node.js, Pandas, Tensorflow, MatPlotlib
- **Development Practices:** Modular design, memory optimization, scalable architecture, Clean code