Jacob Oaks

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EDUCATION

University of Pittsburgh

Dec 2021

BS: Computer Science
GPA: 3.81
Courses: Computer Graphics, OS, Algorithms, Formal Methods, Web Programming, Machine Learning, Data Science, Systems Software, Assembly Language and Computer Organization, Data Structures, Software QA
Dean's Honor List
Honors College

SKILLS

Proficient: Python, Java
Familiar: C/C++, JavaScript, HTML, CSS, SQL, GLSL, Swift, Visual Basic
Python Libraries: PyTorch, NumPy, Pandas, Matplotlib, Flask
Other Libraries: OpenGL, Junit, React
Tools: Git, Docker, Jupyter, Bash

EXPERIENCE

Associate Software Developer

Jan 2022 – Present

Carnegie Mellon University Software Engineering Institute

- **Knowing When You Don't Know**
  - Probabilistic Object Detection
  - Example line 1
  - Example line 2

Emerging Technology Center Intern

Jan 2020 – Dec 2021

Carnegie Mellon University Software Engineering Institute

- **Knowing When You Don't Know**
  - Calibration Evaluation Framework
  - Example line 1
  - Example line 2

- **A Series of Unlikely Events**
  - Created an interactive web demo showcasing our maximum causal entropy inverse reinforcement learning model (MCEIRL) trained on AIS ship data.
    - The demo explains some mechanics of the MCEIRL model and its capabilities and was used to show project progress and introduce the concept to interested parties.
    - The demo was deployed online: https://resources.sei.cmu.edu/downloads/IRL-demo/
  - Developed an environment to simulate the state and action space of ships, used by researchers to investigate noise injection techniques for imitation learning over continuous spaces.
  - Performed extensive empirical analysis of the AIS ship data using Python tools like Pandas and Matplotlib.

PERSONAL PROJECTS

Spacedust

Feb 2021 – May 2021

https://github.com/JacobOaks/spacedust
https://www.youtube.com/watch?v=bRZ01woRtTQ

- Android spaceship battle game built on top of OpenGL ES, a subset of OpenGL meant for mobile and embedded systems.
- Spaceship is controlled using two custom implemented joysticks. All textures and animations, shaders/lighting calculations, simple physics, and UI elements are custom as well.

Ambulare

Feb 2021 – May 2021

https://github.com/JacobOaks/ambulare
https://www.youtube.com/watch?v=2CYq9vNzst4&t=3s

- Side-scrolling game engine built upon the light-weight java game library (LWJGL).
- Contains all custom components such as: textures, animations, a basic physics engine, shader programs, lighting systems, menus and user interface design, and a sound system using OpenAL.
- Uses a custom serialization format and a data loading process that provides precise and easy-to-understand failure messages to support players creating their own content (“stories”).

GeoArt

Mar 2019

https://github.com/JacobOaks/steelhacks19

- Created an iOS app in Swift for Steelhacks 2019 that generates pieces of artwork derived from the unique latitude/longitude location of the device.
- Artwork generated for two locations will resemble each other semi-proportional to how close the locations are.
- The project won second place in the hackathon.