Luke Valentino

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EDUCATION

Swinburne University of Technology   Melbourne, Victoria
Bachelor of Computer Science, Major in Software Development   *Jan. 2021 – Current*

EXPERIENCE

Machine Learning Research Assistant   March 2024 – Current
Central Queensland University   *Melbourne, Victoria*

- Developed algorithm for procedural dataset augmentation, increasing object detection model accuracy from 37% to 73%.
- Generated 17,394 synthetic annotations and 1,565 synthetic images to improve model robustness.
- Trained and implemented models including DETR, YOLOv8, YOLOv9, Faster R-CNN, and RetinaNet.
- Utilized DepthAnythingV2 to generate point clouds from 2D images for accurate fish measurement.
- Contributed multiple sections on machine learning in conference paper set to be published.

Disability Support Worker   January 2022 – Current
Buttons Support Services Pty Ltd   *Melbourne, Victoria*

- Developed personalized caretaking plans in collaboration with parents and carers, leading to improved client satisfaction.
- Enhanced client learning abilities through targeted education in math and writing.
- Facilitated client participation in community activities, fostering social skill development.

PROJECTS

Video Game Development – Dark Tides | *Unity2D, C#, Shaders*   Dec. 2023 – Current

- Lead software developer for a 7-member team, overseeing the development of the game from initial concept to late prototype phase.
- Developed advanced lighting, shadows, and procedurally generated shaders to simulate dynamic water and fire effects, enhancing visual fidelity.
- Designed and implemented a complex Tetris-style inventory system to provide immersive gameplay.
- Engineered the AI systems for fish and enemies, focusing on realistic behavioral patterns to improve player interaction.
- Integrated a shop system where players can buy and sell items, managed with an intuitive UI/UX design.
- Managed project tasks and milestones through a Kanban board, collaborating with the team and tracking progress using Unity Version Control.

FishAI – Capstone Project | *Python, Django, ReactJS, Machine Learning*   Feb. 2023 – Nov. 2023

- Collaborated with a team to design and develop a web application for processing and analyzing video files using object detection models.
- Solely responsible for the machine learning training and integration into the web application.
- Implemented a REST API and integrated user account security features to handle data and ensure secure access to processed results.
- Generated detailed statistical reports from object detection outcomes, including metrics like fish per frame, species identification, and counts.

RELEVANT COURSEWORK

Software Testing and Reliability, Data Structures and Patterns, Network Administration, Creating Secure and Scalable Software, Introduction to Artificial Intelligence, Intelligent Systems, Cloud Computing Architecture, IoT Programming

TECHNICAL SKILLS

Languages: C#, C++, Python, HTML/CSS, Java, JavaScript, SQL (Postgres), PHP
Frameworks: Unity, Flask, React, Node.js, Django
Developer Tools: Git, Unity Version Control, Jupyter, AWS, Google Colab, VS Code, Visual Studio, Arduino, Firebase