Lê Ngọc Anh Khoa

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Objective

Passionate AI engineering student seeking an internship to apply machine learning and reinforcement learning skills in real-world projects.

Education

University of Science - VNUHCM, Information Technology - Computer Science Sept 2022 – Present

- GPA: 8.34
- **Revalent Course:** Introduction to Machine Learning, Algorithm Design and Analysis, Introduction to AI, DSA, OOP, ...

Projects

Multimodal Fashion Search Engine
Link: github.com/pipoiwoczz/Fashion-Search-Engine
Overview: Developed an end-to-end multimodal search engine for fashion items using computer vision and NLP, supporting both image and text queries.
Key Features:

- Implemented CLIP embeddings + FAISS indexing achieving **<0.5s** query latency
- Integrated BLIP model for automatic image captioning to enable text-based search
- Built Gradio interface with gallery previews for both query modes
- Processed/optimized 50k+ DeepFashion images through preprocessing pipeline

Tech Stack: Python, PyTorch, CLIP, FAISS, Hugging Face Transformers, Gradio

Simple Neural Network for Handwritten Digit Classification
Link: github.com/pipoiwoczz/Simple-Neural-Network
Overview: Built a digit classification model from scratch using NumPy and implemented backpropagation without external ML libraries.
Key Features:

- Achieved 98% test accuracy on the MNIST dataset.
- Designed and tuned activation functions, learning rates, and architectures.
- Visualized training performance and evaluated multiple configurations.

Tech Stack: Python, NumPy, Matplotlib

Wumpus World Agent (AI Logic-Based Agent)
Link: github.com/pipoiwoczz/Wumpus
Overview: Developed an intelligent agent to safely navigate a hazardous grid-world using symbolic reasoning and logic-based planning.
Key Features:

- Used propositional logic and Z3 solver for dynamic inference.
- Integrated percept-based frontier exploration with hazard detection and survival prioritization.
- Visualized internal agent state and decision-making using tkinter GUI.

Tech Stack: Python, Z3 Solver, Tkinter

Crossing Game – Object-Oriented Terminal Arcade (C++)
Link: github.com/pipoiwoczz/Crossing_Game_OOP
Overview: Designed and implemented a terminal-based obstacle-dodging game engine using modular C++ and Windows APIs.
Key Features:

- Built 20+ OOP classes for player, obstacles, rendering, sound, and UI widgets.
- Integrated multi-threaded engine loop for rendering and input using ‘std::thread‘.
- Designed game save/load system and text-based sprites with dynamic difficulty.

Tech Stack: C++, Windows.h, MCI Audio, Threading, OOP

Reinforcement Learning Agent for Tic-Tac-Toe
Link: github.com/pipoiwoczz/Tic-tac-toe-RL-Agent
Overview: Implemented a Q-learning agent to master Tic-Tac-Toe through self-play, with state tracking, exploration, and policy updates.
Key Features:

- Used epsilon-greedy exploration and state hashing for fast convergence.
- Designed game environment, state encoding, and reward function from scratch.
- Visualized agent-vs-agent and human-vs-agent sessions using Tkinter GUI.

Tech Stack: Python, Tkinter, NumPy

Technologies

Languages: Python, C++

Frameworks/Tools: NumPy, PyTorch, TensorFlow, Z3, Docker, Git