Tanut Bumrungvongsiri

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PERSONAL SUMMARY

Artificial Intelligence engineer with 2 years of hands-on experience in designing, fine-tuning, and deploying AI solutions that automate complex workflows and improve productivity. Strong expertise in applying state-of-the-art models to real-world scenarios, with a focus on data characteristics, system constraints.

EDUCATION

Bachelor's in Robotics and Automation Engineering **(July 2020 - May 2024)**
King Mongkut's University of Technology Thonburi
Institute of Field Robotics
GPAX : 3.74 / 4.00 (First class honor)

TECHNICAL SKILLS

- **Programming Languages**: Python (Advanced), C / C++ (Intermediate)
- **Frameworks**: PyTorch, TensorFlow, Keras, OpenCV, Transformers (Hugging Face), Ultralytics, scikit-learn
- **Backend & Deployment**: FastAPI, Docker, Linux
- **Applied AI & ML Expertise**: Model fine-tuning (including VLM-LoRA), OCR pipelines, computer vision systems, images detection and classi, and end-to-end model deployment.

WORK EXPERINCE

Vulcorn AI **(July 2024 - Present)**
AI/ML Engineer

◆ ***Digitalization for 2D Technical Engineering Drawings***

- Designed and implemented an end-to-end pipeline for extracting textual and semantic information from 2D technical engineering drawings.
- Applied Fine-tuned transformer-based OCR models to achieve high-accuracy text detection and recognition across complex drawing layouts.
- Leveraged Fine-tuned Vision-Language Models (VLMs) to semantically understand and extract key metadata from 2D technical engineering drawings.

The Bangkok Unitrade Co., Ltd. **(June 2023 - november 2023)**
AI/ML Engineer & Software developer Internship

- Designed and adapted object detection for surgical instruments moving along a conveyor belt for classification, employing YOLOv8.
- Conducted research and applied a multi-view classification model to fine graind classify surgical instruments which utilizing data from three different camera perspectives achieving 99.4% accuracy on 44 surgical instrument classes.
- Developed a software application with a PyQt5 graphical user interface (GUI) for integrating a classification model for object detection and classification.
- Implemented logging functionality to record prediction in a MySQL database.

PROJECTS

***Deep Learning-based Navigation for Mobile Robots in Dynamic Environments* | May 2024**

- Adapted TD3 and SAC deep reinforcement learning algorithms for mobile robot navigation in dynamic environments with moving obstacles in gazebo simulation.
- Utilized mathematics to group LiDAR clusters and track obstacles in each frame using the Hungarian Algorithm and Kalman Filter

***Solve TicTacToe games using a Reinforcement Learning algorithm.* | April 2024**

- Applied reinforcement learning techniques to train an agent to play Tic-Tac-Toe using Q-learning, SARSA, and Double Q-learning.
- Compared the performance of result of Q-learning, SARSA, and Double Q-learning algorithms

***Image Classification of Surgical Instruments* | March 2023**

- Utilized image classification model for surgical instrument recognition using data augmentation. Compared performance of fine-tuned ResNet-50 and VGG-16 models pre-trained on ImageNet.
- Optimized machine learning model performance by integrating the Attention Network mechanism with SEResNet50, enhancing the model's capability to focus on relevant features.
- Adapted fine-grained classification techniques like Bilinear Pooling and WSDAN (Weakly Supervised Data Augmentation Network) from research papers to enhance the classification model, achieving 98.5% accuracy on 4 surgical instrument classes.

***Telemanipulation of Robot Hand using Human Gesture* | November 2022**

- Adapted the Mediapipe and OpenCV library to track and support 4 human gestures for control universal robot arm and gripper.
- Implemented socket-based communication between a client and server to enable telemanipulation over the network

***Solve 8 puzzle and maze with AI* | October 2022**

- Designed and developed a software using pygame for solution utilizing the A* algorithm to efficiently solve the 8-puzzle game, which finds the minimum number of moves required to reach the goal state.
- Implemented an A* search algorithm with modifications to efficiently solve maze pathfinding problems.

PUBLICATION

- *Automated Bounding Dimension Retrieval: A Machine Learning-Driven Framework for Engineering Drawing Interpretation* (ICCI 2025) (Co-author)

CERTIFICATION

- Certification in the online course Deep Learning for Image Classification by learn.thairobotics
- Certification in the online course Image Processing by learn.thairobotics
- Certification in the online course You Only Look Once (YOLO): Unified, Real-Time Object Detection by learn.thairobotics