

Chen-Han Lin

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in Allen Lin 📄 allenchenhan99

Education

National Yang Ming Chiao Tung University, College of Computer Science Sept 2023 – Present
Master's in Data Science and Engineering

- **Coursework:** Machine Learning, Deep Learning

National Cheng Kung University, College of Science Sept 2018 – June 2022
Bachelor's degree in Mathematics

- **Coursework:** Probability and Statistics, Fourier Analysis, Data Structures and Algorithms

Research Topic

3D Human Skeleton Estimation and Action Recognition

- Advisor: Chin-Tien Wu
- Estimated completion time: Sept 2025
- Enhanced existing VPT (Video Pose Transformer) modules to improve efficiency while maintaining the ability to process monocular video inputs for 2D-to-3D human pose estimation.
- Leveraged optimized 3D joint data for advanced motion analysis and improved computational performance.

Competition Experience

TSMC IT CareerHack Jan 2024

A fourth-place ranking


- Utilized the Llava base model with fine-tuning techniques using LoRA to improve task-specific performance.
- Applied data augmentation techniques to enhance dataset diversity and improve model generalization.
- Implemented image filtering to remove noisy data that could negatively impact model accuracy.
- Researched alternative base models, such as Flamingo and Honeybee, to potentially replace Llava for improved performance.

TBrain AI GO Housing Price Prediction Sept 2023 - Nov 2023

Ranked in top 4%

- Preprocessed and merged datasets, including external data, through advanced data cleaning techniques to ensure model accuracy and consistency.
- Applied ensemble learning by integrating LightGBM and XGBoost models to leverage their strengths in regression tasks.
- Optimized prediction accuracy through hyperparameter tuning and model evaluation on validation datasets.
- Conducted data augmentation and feature engineering to enrich model input and reduce overfitting risks.

Projects

Low-Rank Adaptation and Combined Parameter-Efficient Tuning for Large Models [Poster Link](#) 

- Investigated the integration of parameter-efficient fine-tuning (PEFT) methods such as LoRA, BitFit, Adapter, and Prefix-tuning for large pre-trained models across vision and NLP tasks.
- Showed that LoRA is a stable and robust method across different domains and tasks, while BitFit and Prefix-tuning demonstrated task-specific advantages in NLP and vision tasks, respectively.
- Achieved significant improvements in performance by combining multiple PEFT methods, highlighting their compatibility and the trade-off between trainable parameters and model accuracy.
- Experimented with models such as RoBERTa, SegFormer, and ViT-B-32, demonstrating LoRA's consistent

performance and enhanced results when paired with other PEFT methods.

Simulating Oceanic Environments with OpenGL

- Leveraged OpenGL in C++ to simulate realistic oceanic environments with dynamic wave modeling, lighting effects, and texture mapping.
- Implemented DuDv mapping to replicate water flow and loaded sky textures to cover the entire environment for realism.
- Incorporated Fresnel Effect for accurate rendering of light reflections on water surfaces.

Game Theory Applied to Darts Strategies

- Analyzed professional dart players' strategies from past matches using game theory to optimize decision making for maximum benefits.
- Investigated the trade-offs between risk and reward in critical gameplay scenarios to model optimal strategies.
- Identified Nash equilibria in various gameplay scenarios, providing corresponding strategies to achieve optimal outcomes.
- Developed insights into the application of game theory in sports to improve performance analysis.

Relevant Skills

Programming Languages:

- C++, C, Python, SQL
- Java, JavaScript

Frontend Technologies:

- HTML, CSS, JavaScript
- Vue.js

Backend Technologies:

- MongoDB, Docker

Project Management and Collaboration Tools:

- Notion, Slack, Git, GitHub, GitLab
- GCP (Google Cloud Platform)