Xinghao Chen

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EDUCATION

University of Washington | Seattle, US   (Expected) September 2024 - March 2026
Master of Science: Electrical and Computer Engineering (GPA:3.95/4.0)
   Selected Coursework: Computer Vision, Large Language Models, Practical Machine Learning (Stanford Online Course)
Henan University | Zhengzhou, China
Bachelor of Engineering: Computer Engineering (Automation Specialization)   September 2020 - July 2024
   Selected Coursework: Data Structure and Algorithms, Linear Algebra, Optimization Methods, Software Development

RESEARCH PROJECTS

Maritime-Specific LLaMA Fine-Tuning   October 2024
- Fine-tuned the LLaMA3-8B large language model using a specialized dataset comprising maritime standards, technical terminology, and domain-specific guidelines.
- Implemented Low-Rank Adaptation (LoRA) techniques for efficient fine-tuning, enabling the model to excel in industry-specific tasks such as compliance analysis, technical documentation interpretation, and problem-solving.
- Achieved superior performance, surpassing larger general-purpose LLMs in accuracy and relevance on maritime-specific benchmarks.
- Designed and optimized the model for local deployment, addressing challenges of limited or unreliable internet access in maritime environments.

Computer Vision: Advanced Image Generation Pipeline   November 2024
- Integrated multiple ML models (contour detection, style transfer, upscaling) in a unified pipeline
- Utilized LoRA models to control and enhance the unique features of the characters, ensuring their distinct identity.
- Integrated ControlNets for accurate contour extraction from the input line art.
- Leveraged a DRCT (Deep Residual Correction and Transformation) model to upscale the image resolution while maintaining visual clarity and consistency.
- The workflow was recognized and adopted by artists and designers in the illustration community, streamlining character design and drawing processes.

CIDAUT AI Fake Scene Classification Challenge   December 2024
- Developed a fine-tuned Vision Transformer model for the CIDAUT autonomous driving scene classification challenge, utilizing BEiT as the backbone architecture to distinguish between real and synthetic driving scenarios.
- Implemented custom training pipeline with Focal Loss to address class imbalance, along with AdamW optimizer and learning rate scheduling for optimal convergence.
- Enhanced model robustness through strategic design choices including early stopping mechanism, 5-fold cross validation, and efficient data preprocessing with 384x384 image resolution.
- Achieved 92.5% accuracy on the competition's test set, demonstrating superior performance in detecting subtle artifacts in synthetic driving scenes.
- Employed PyTorch framework with custom dataset handling and memory optimization techniques, ensuring efficient training on GPU resources.

PROFESSIONAL EXPERIENCE

UW Sensors, Energy, and Automation Laboratory| Seattle, US   September 2024 – December 2024
Full Stack Developer
- Designed and enhanced a real-time information upload system, improving efficiency and data accessibility.
- Improved the information display and editing interface, creating a more interactive and user-friendly experience.
- Automated laboratory resource scheduling through Google Sheets scripts, reducing manual processing time by 60%
- Supported the gamification of laboratory management by developing web-based tools to boost team engagement and optimize task distribution.

SKILLS

Programming Languages: Python (PyTorch, TensorFlow, NumPy, Pandas), C/C++, Java
Machine Learning: Neural Networks (Transformers, CNN, LSTM), Model Fine-tuning, Computer Vision, Model Development
Tools: Git, Docker, VS Code, MATLAB, Anaconda, GPU Programming
Mathematics: Linear Algebra, Optimization, Statistical Analysis
Languages: English (Professional), Chinese/Mandarin (Native)