Jianglong Yu

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EDUCATION

Texas A&M University (GPA: 4.0/4.0)   **Aug 2023 - Dec 2024**
Master of Science in Computer Science   College Station, TX

Oregon State University (GPA: 3.7/4.0)   **Sep 2019 - Jun 2023**
Bachelor of Science in Computer Science   Corvallis, OR

WORK EXPERIENCES

Research Assistant, Deep Learning-Driven CSI Compression   **Jun 2024 - Present**
Mentor: Professor. Dileep Kalathil and Krishna Narayanan   College Station,TX
Responsibilities: Responsible for designing and implementing deep learning algorithms using the PyTorch framework for lossy compression of Channel State Information (CSI) to optimize data transmission efficiency in communication systems. Conduct performance comparison experiments with existing benchmark models to assess and refine the effectiveness of the compression algorithms.

Teaching Assistant, Oregon State University   **Jun 2022 - Mar 2023**
Web Development Course   Corvallis, OR
Responsibilities: Responsible for grading, reviewing assignments. Design and implement strategies to enhance student engagement. Focus on teaching interaction and communication to achieve significant results, and have improved my personal communication abilities and teaching skills.

PROJECTS

Optimization of Decision Transformer for Atari Games   **Spring 2024**
Overview: Enhanced the original **Decision Transformer** architecture to optimize Atari games performance by embedding state, reward-to-go, and action sequences into an advanced **multi-head attention Transformer model**. Model's framework is **pytorch**
Model Optimization: By integrating a loss-decay algorithm, conducting an ablation study on context length, and refining the training process with the **AdamW** optimizer, I improved the efficiency of the Decision Transformer framework over traditional offline RL algorithms. Additionally, exploring model pruning optimized performance without sacrificing efficiency. These improvements enhance gameplay in Atari games
Result: The optimized model was tested across a variety of Atari games using BatchRL datasets, demonstrating faster convergence, enhanced game-winning capabilities, and greater robustness compared to the baseline model.

Image Compression Using Conditional Diffusion Models   **Spring 2024**
Overview: Developed an image compression system by integrating a **VAE** with **conditional diffusion** models. This model aims to efficiently compress and subsequently enhance image quality through advanced machine learning techniques. Model's framework is **pytorch**
Compression: Utilized a novel approach using VAE with **hyperpriors** to optimize bitrate while preserving superior image detail
Reconstruction: Incorporated a conditional diffusion model in the reconstruction phase, using the latent variables generated by the VAE as context. This approach replaced traditional noise prediction methods with direct **image prediction**, significantly **reducing inference time steps**
Results: Demonstrated superior performance over existing deep learning-based compression methods, achieving lower bitrates and improved image quality, validated through **PSNR** and **LPIPS** metrics.

Multimodal Image and Audio Recognition Model   **Spring 2024**
Overview: Developed an advanced multimodal model for accurate recognition and analysis of MNIST images and Audio MNIST data. Model's framework is **pytorch**.
Image Processing: Implemented deep feature extraction for MNIST images using **CNN ResNet-50**.
Audio Processing: Applied **spectral subtraction** for noise reduction in audio data; Trained processed audio data with **minGPT** to enhance recognition accuracy; Utilized **t-SNE** to analyze and improve the performance of the initial audio model by identifying weak areas and optimizing through data preprocessing.
Model Fusion: Employed **multi-head attention** mechanism to effectively combine features from both modalities.
Achievements: Achieved a 99.5% accuracy rate on the standard test set, demonstrating the model's effectiveness and applicability.

PROFESSIONAL SKILLS

Languages: Python, C/C++
Technologies: Git, PyTorch, Gym, OpenCV, Docker, Deep Learning, Flask, Agile Development, Problem Solving.