Weiji Chen

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EDUCATION

University of California San Diego 09/19 - 06/25
B.S. | M.S. Computer Science
Summary: Experienced in Computer Vision, Deep Learning, and Robotics
Coursework: Data Structures, Algorithms, Deep Learning, Computer Vision, Computer Architecture, Computer Systems, Parallel Processing, Linear Algebra, Probability and Statistics, Numerical Analysis

EXPERIENCE

Machine Learning Engineer Intern | Nvidia 05/24 - 09/24
- Trained, deployed multi-AI agent model - leveraged Large Language Models to be capable of analyzing GPU observability data, integrate external data sources, and be prompted to initiate tasks from user inputs i.e. scheduling training on high performance computing clusters **(Python, LangChain)**
- Fine-tuned models on internal dataset, engineered RAG component to improve model querying from SQL database, build benchmark metrics by sourcing evaluation questions, and automated validation pipeline

Applied Computer Vision Research Intern | Geomagical Labs 01/23 - 04/24
- Developed computer vision model (CNNs, Transformers) for depth estimation given single view camera input (RGB based) - reduced model size by 30% to optimize for deployment and inference with pruning, quantization - improved loss functions, modified network architecture (**Python, COLMAP**)
- Created new model architectures by combining different decoders with SoA (state-of-the-art) backbones trained and evaluated on NYUv2 dataset to improve baseline memory and latency in perception tasks

Computer Vision Engineer Intern | Sony 09/23 - 12/23
- Research and develop deep learning/computer vision algorithms for real-time rendering in **3D reconstruction** framework using monocular depth estimation **(Python, PyTorch, Nvidia Jetson)** - compared POC to stereovision and SfM methods for viability in photogrammetry applications
- Explored NeRF and Gaussian Splatting as potential replacements for geometry-based 3D reconstruction and rendering methods - applications in **XR/VR** for **object reconstruction** (**Python, PyTorch**)

Robotics Researcher and Engineer | Su Lab 05/23 - 12/23
- Developed a **multimodal robotic model** capable of grasping objects in dynamic environments using Vision-Language Models for object detection and segmentation. Trained reinforcement learning policies, incorporating mixed-domain and self-supervised training techniques to achieve state-of-the-art results.
- Build data automation pipeline to source high quality 3D object datasets for robotic models - used **CLIP** to filter Objaverse and collect training dataset - application for robotic training in sim2real initiatives
- Enhance depth estimation neural networks for stereo vision depth cameras by using mixed domain learning solution - combined supervised disparity loss in simulated domain and self-supervised losses on real domain dataset - outperforms SOTA stereovision methods - pending **2024 conference** submission

3D Computer Vision Researcher | Ramamoorthi Lab 07/23 - 11/23
- Developing **neural rendering framework** - blending Deep Learning approaches - to enable 3D scene reconstruction with enhanced graphics for both large scale and small complex objects - used bundle adjustment to optimize for **camera pose estimation** in **NeRF** (**Python, PyTorch, CUDA**)

Machine Learning Engineer Intern | San Diego Supercomputer Center 03/23 - 06/23
- Utilized **SQL** to clean large-scale datasets and **Spark** to streamline ML experimentation pipeline, increasing scalability, database management, and reducing training time of ML models by 30% on HPC
- Optimized computer vision models (CNNs) for object detection, semantic segmentation- used distributed training and model pruning to reduce model size and speed up inference in deployment (**C++**)

SKILLS

Machine Learning Tools: PyTorch, TensorFlow, Apache Spark, CUDA, OpenCV, OpenGL, ROS
Programming Languages: Python, C++, C#, SQL, Java, TypeScript, HTML, CSS, Matlab