Jasper Tan

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EDUCATION

The University of Texas at Austin May 2026
Master of Science in Electrical and Computer Engineering GPA: 4.0/4.0

The University of Texas at Austin May 2025
Bachelor of Science in Electrical and Computer Engineering; Minor in Business Administration GPA: 3.85/4.0

Coursework: Reinforcement Learning, Machine Learning on Real-World Networks, Computer Vision, Operating Systems, Computer Architecture, Probability, Algorithms, Data Science Lab, Software Engineering Lab, Matrices

SKILLS

Programming Languages: Python, Java, JavaScript, TypeScript, C/C++, HTML/CSS, PostgreSQL, GDScript, Verilog
Tools/Frameworks: Git, Linux, React.js, Node.js, TensorFlow, PyTorch, Numpy, Pandas, Flask, Jest, Mocha, JUnit, GraphQL
Technologies: AWS, Unreal Engine, Cypress, Docker, Rancher Desktop, Datadog, CircleCI, LaunchDarkly, MongoDB

TECHNICAL EXPERIENCE

Cvent - *Software Engineering Intern*; Tysons Corner, VA Jun 2024 – Aug 2024
- Designed date-time modals in JavaScript with optimized state management using Redux, React hooks, and mutations
- Implemented real-time data visualization and logging with Datadog to monitor GraphQL queries to a PostgreSQL database
- Created 3D models and animations in Unreal Engine 5 using C++ for simulating custom event spaces with spatial computing
- Leveraged pnpm for faster dependency management and build process, integrating Jest unit and Cypress smoke tests

The University of Texas at Austin - *Machine Learning Researcher*; Austin, TX Aug 2023 – Present
- Advancing a novel detection model incorporating feature fusion for acoustic and inertial classification of human activity
- Conducting transfer learning on a MobileNet V2 architecture for feature extraction and fine-tuning based on IMU data
- Exploring model architectures (YAMNet, ResNet, VGG-16) trained on Google AudioSet to classify sound and image data

FirstParty - *Data Engineering Intern*; New York, NY Jun 2023 – Jun 2024
- Developed Python scripts in AWS SageMaker leveraging GPT Text Embedding models to compute string similarities
- Leveraged cosine similarities and Levenshtein distance algorithms to generate confidence scores for data stored in S3
- Spearheaded data classification utilizing natural language processing methods to enrich the internal database
- Employed object-oriented programming to design automated data ingestion applications to manage web-scraped data

Texas Spacecraft Laboratory - *Command and Data Handling Researcher*; Austin, TX Aug 2022 – Jun 2023
- Formalized 5+ satellite configurations to optimize position and image processing using a fully connected neural network
- Implemented a GPS and EPS interface in C/C++ on an I2C bus to assess the relative pose estimate of a target in space

PROJECTS

Chatbot-Enhance Recommender System Aug 2024
- Designing a novel training paradigm with LLMs to generate recommendations based on conversations and user history
- Fine-tuning various LLMs (Gemma, Llama 2, Mistral) with LoRA to synthesize user data into recommendation requests
- Training a BERT text encoder and DeepFM recommendation model using triplet loss to enhance movie recommendations.

Multi-Agent Point Cloud Segmentation Aug 2024
- Developing a graph-based network with a k-nearest neighbor algorithm for 3D object segmentation on LiDAR point clouds
- Implementing reinforcement learning policies with graph convolutional networks (GCNs) to enhance object identification

Fashion-Atlas May 2024
- Devised a garment re-identification application aimed at localizing clothes from images to give tailored recommendations
- Leveraged YOLOv8 to train a real-time object detection and classification neural network to crop and identify images
- Trained a CNN on a ResNet 50 architecture with a triplet loss function and Euclidean Dist. to generate feature embeddings

HERD Apr 2024
- Fine-tuned a text-to-image diffusion model (Stable Diffusion) using Reinforcement Learning to generate prompted images
- Built a distributed training pipeline using Transformer Reinforcement Learning and image reward libraries to adjust weights
- Employed policy gradient methods (DDPO, DPOK, DDPG, HERD) and LoRA fine-tuning to improve iterative denoising steps

RationaLlama Apr 2024
- Fine-tuned an instruction-tuned Llama 2 using QLoRA to solve complex rational NLI tasks from the LogicQA dataset
- Employed 4-bit quantization with Bits and Bytes to minimize compute resources, and achieved an 8% increase in accuracy