

Jasper Tan

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EDUCATION

The University of Texas at Austin

Master of Science in Electrical and Computer Engineering

May 2026

GPA: 4.0/4.0

The University of Texas at Austin

Bachelor of Science in Electrical and Computer Engineering; Minor in Business Administration

May 2025

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 npm 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

May 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
- Developing a pipeline with a BERT text encoder to feed embeddings to a fine-tuned DeepFM recommendation model

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 finetuning to improve iterative denoising steps

RationalLlama

Apr 2024

- Fine-tuned an instruction-tuned Llama 2 utilizing 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

APL Catalog Management System

Apr 2023

- Implemented a backend database and management system with Java and an intuitive front-end GUI with FXML and CSS
- Employed socket programming, observers, and multi-threading techniques to facilitate client-server communication