Jonathan Villarreal

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EDUCATION

Texas State University May 2024
Bachelor of Science in Computer Science San Marcos, TX
Minor in Applied Mathematics

EXPERIENCE

Amazon Web Services - Transcribe Seattle, WA
Software Engineer I May 2025 - Current

- Executed experiments to support system architecture changes to reduce compute cost by more than 30%
- Reduced model deployment time from 5 dev days to hours by developing model update automation
- Refactored code base to accommodate new models and compute requirements
- Triaged and resolved production incidents across on-call rotation

TXST Geo-Intelligence Lab San Marcos, TX
Undergraduate Research Assistant Sept. 2023 - Apr. 2024

- Replicated and designed Implicit Neural Representations experiments for data compression
- Successfully applied deep learning data compression techniques on micro-CT scans
- Achieved compression rate of 55:1, results were used for lab's future work proposal
- Collaborated with doctoral student, presented our progress in weekly lab meetings
- Developed Deep Operator Network for physics modeling

TXST Intelligent Multimodal Computing and Sensing Lab San Marcos, TX
Undergraduate Research Assistant May 2022 – May 2024

- Developed action tracking system to record Unity data in sync with biological sensors
- Used Unity and C# to develop a virtual reality grocery store for behavioral testing
- Trained faculty on biological signal capture procedures

TXST Shared Research Operations San Marcos, TX
Student Worker Feb. 2022 – Mar. 2023

- Coordinated with 7+ people for mechanical, electrical, and other lab projects
- Trained 10+ researchers on operation of lab equipment
- Operated in 8 labs e.g. Analysis Research Service Center and Advanced Prototyping Lab

PROJECTS

Context-aware implicit neural representations to compress Earth systems model data Jul. 2025

- Designed and developed ML training job scheduler resulting in minimal GPU downtime
- Researched and developed in PyTorch training optimization procedure to maximize compression gain
- Co-authored peer-reviewed publication in Scientific Reports on CA-INR, a novel MLP-based lossy compression architecture for petabyte-scale Earth system model data

Independent Study into Curriculum Learning for Neural Networks Aug. 2023 - Dec. 2023

- Conducted literature review into curriculum learning training algorithms
- Developed batch sampling algorithms in PyTorch
- Proposed methods showed increase convergence speed in early training
- Presented research progress with doctoral students in weekly lab meetings

Vision System for Card Counter Detection Nov. 2023 - Dec. 2023

- Developed multimodal neural network in TensorFlow to detect card values on blackjack table
- Generated synthetic training data for custom card deck
- Developed image prepossessing pipeline for feature extraction
- Collaborated with two others to design system requirements

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, C#, C++, SQL, HTML, CSS
Technologies: AWS, PyTorch, TensorFlow, Scikit-learn, Pandas, Unity, Git, GitHub