

Jonathan Villarreal

Seattle, Washington — jonathanvillarreal.jmv@gmail.com

EDUCATION

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

Amazon Web Services - Transcribe Software Engineer I	Seattle, WA May 2025 - Current
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- 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 Java, Python, and Typescript code base to accommodate new models and compute requirements
- Built build scalable, fault-tolerant, low cost, and easy to manage/use solutions with AWS services such as EC2, Lambda, DynamoDB, S3, Athena, SQS, Step Functions, and CloudWatch
- Triaged and resolved production incidents across on-call rotation

TXST Geo-Intelligence Lab Undergraduate Research Assistant	San Marcos, TX Sept. 2023 - Apr. 2024
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- 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 Undergraduate Research Assistant	San Marcos, TX May 2022 – May 2024
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- 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 Student Worker	San Marcos, TX Feb. 2022 – Mar. 2023
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- 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
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• 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, Typescript, JavaScript, C#, C++, SQL, HTML, CSS

Technologies: AWS, PyTorch, TensorFlow, Scikit-learn, Pandas, Unity, Git, GitHub