

PROFESSIONAL SUMMARY

Computer Science graduate student with specialized research experience in machine learning, computer vision, and large-scale data processing. Proven track record developing scalable AI solutions for agricultural and genomic applications with focus on system architecture optimization and algorithm efficiency. Seeking software engineering opportunities to apply ML expertise and algorithmic problem-solving skills at leading technology companies.

EDUCATION

- University of Georgia

Athens, GA

Master of Science in Computer Science - GPA: 3.76

August 2024 - Expected Graduation: May 2026
- RMK Engineering College

Chennai, TN

Bachelor of Technology in Computer Science and Business Systems - GPA: 3.7

August 2020 - Graduated: May 2024

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, TypeScript, SQL, C++, R
ML/AI: TensorFlow, PyTorch, Scikit-Learn, Keras, Transformers, Computer Vision, NLP
Data Engineering: NumPy, Pandas, PySpark, Hadoop, Data Pipelines
Cloud & DevOps: AWS (S3, EC2, Lambda), Docker, CI/CD, Kubernetes
Web & Mobile: React, Node.js, RESTful APIs, Flask, Microservices Architecture

EXPERIENCE

- Graduate Research Assistant — Genomic Prediction of Soybean Yield

May 2025 - Present

University of Georgia

Athens, GA

 - Engineered a scalable dimension reduction pipeline for high-dimensional DNA sequence data (4000 features x 1000 samples), implementing Gaussian Process models with distributed computing that preserved biological significance and improved prediction accuracy by 23%.
 - Developed optimized Python data preprocessing algorithms for genetic sequences, handling missing values and implementing NumPy vectorization that reduced processing time by 65% while ensuring cross-dataset model performance.
 - Implemented and benchmarked multiple dimensionality reduction techniques (PCA, t-SNE, UMAP) with scikit-learn hyperparameter tuning, conducting comparative analysis to identify the most efficient approach for genomic data visualization and feature extraction.
- Graduate Research Assistant — Automated Maize Brace-Root Phenotyping

May 2025 - Present

University of Georgia

Athens, GA

 - Designed high-throughput computer vision system using PyTorch and OpenCV for automated agricultural phenotyping, improving maize root segmentation accuracy from 47% to 71% through systematic evaluation and optimization of U-Net architecture variants.
 - Established comprehensive deep learning pipeline with AWS integration, including transfer learning, two-stage fine-tuning and advanced data augmentation techniques that reduced analysis time by 35% compared to manual methods.
 - Architected robust data processing solution with Python that resolved complex JSON annotation formats, coordinate transformation errors, and data integrity challenges, establishing reliable foundation for distributed machine learning model training.

PROJECTS

- Student Face Recognition System - Python, Flask, React, Docker, AWS

January 2025

 - Designed a distributed facial recognition system that processes real-time video streams, extracts face encodings, and matches identities with 95%+ accuracy using OpenCV and face_recognition libraries.
 - Built a microservices architecture with React frontend and Flask backend, deploying RESTful APIs that integrated computer vision algorithms with SQLAlchemy database for scalable student identification.
 - Containerized application components with Docker and deployed on AWS EC2, implementing secure image processing pipeline with validation protocols and efficient data storage that reduced identification time by 40%.
- Image Caption Generator - TensorFlow, VGG16, NLP, Python, GCP

December 2024

 - Created an AI image captioning system using TensorFlow, integrating VGG16 CNN for feature extraction and LSTM networks for text generation, achieving a BLEU-1 score of 0.64 on the Flickr8k dataset.
 - Architected an end-to-end deep learning pipeline combining computer vision and NLP techniques, processing 8,000+ images and extracting 4096-dimensional feature vectors using optimized parallel processing.
 - Developed a custom data generator and optimized training workflow using Keras with TensorFlow backend, implementing checkpoint-based training that reduced model loss from 6.36 to 3.96 while handling a vocabulary of 8,700+ unique words.

PUBLICATIONS

- **IEEE ICRMKM-AI**

January 2024

- Vemuru, V.D., et al. "Enhancing Image Deblurring Algorithm Selection and Performance Evaluation for CCTV"
- Vemuru, V.D., et al. "Securing Children Based on IoT and Emotion Prediction"