Venu Dattathreya Vemuru

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Education

- **University of Georgia** — Athens, GA
  Master of Science in Computer Science; GPA: 3.7 — *Aug 2024 - May 2026(Expected)*
  - Relevant Coursework: Algorithm Optimization, Data Structures and Algorithms, Machine Learning, Database
- **RMK Engineering College** — Chennai, India
  Bachelor of Science in Computer Science; GPA: 3.74 — *Aug 2020 - May 2024*

Experience

- **Full Stack Developer** — May 2025 - Present
  University of Georgia - SER-CAT Lab — *Athens, GA*
  - Developing enterprise web application using Drupal, PHP, JavaScript, and MySQL on Pantheon Hosting, architecting data migration workflows for 10,000+ scientific records with superfish jQuery navigation system
  - Leading iterative development process with lab directors and faculty, gathering requirements, implementing features, and incorporating feedback through prototyping cycles using Git Dev/Test/Live deployment pipeline
  - Building responsive interface serving 19+ research institutions and 500+ researchers, optimizing user experience and performance on cloud infrastructure with continuous integration workflows
- **Machine Learning Researcher** — Jan 2025 - Present
  University of Georgia - Soybean Breeding and Genetics Laboratory — *Athens, GA*
  - Architected ML pipeline using Python, PyTorch, and scikit-learn with two-stage architecture that processed 1,512 genomic samples over 10-year dataset, achieving 84% accuracy improvement over baseline GBLUP model
  - Implemented dimensionality reduction techniques (like PCA and autoencoders) to transform 10,000+ features into optimal subsets
  - Collaborated with postdoctoral researchers and faculty to build cross-platform ML system integrating Python and R, implementing GPU-accelerated workflows that reduced analysis time by 60%
- **Computer Vision Researcher** — Jan 2025 - May2025
  University of Georgia - Wallace Lab — *Athens, GA*
  - Developing computer vision system for automated brace root health assessment, implementing 7+ deep learning architectures (UNet3+, ResNet50-UNet, Attention UNet) in TensorFlow to achieve 71% segmentation accuracy
  - Engineered ML pipeline using Python and OpenCV to automate root counting and image analysis, designing custom loss functions and data augmentation techniques that reduced manual measurement time by 90% for brace root images
  - Built semantic segmentation models with 50M+ parameters using TensorFlow Keras, optimizing GPU performance and implementing custom data generators to advance ongoing research

Projects

- **Student Identification Management** - *Python, Flask, OpenCV* [GitHub] Jan 2025
  - Built and deployed facial recognition attendance system using Python, Flask, and OpenCV achieving 95% accuracy for professor's classes serving 180+ students across multiple semesters
  - Developed RESTful API architecture with real-time video processing and optimized SQLite queries, reducing database load by 90% while ensuring zero camera resource conflicts
- **Cinema Booking System** - *Next.js, React, Node.js, MongoDB, Tailwind CSS* [GitHub] Feb 2025
  - Developed full-stack cinema booking platform using Next.js, React, and Node.js with 9+ Mongoose MongoDB schemas, implementing real-time seat reservations and atomic transactions to eliminate double-booking conflicts
  - Optimized application performance through SSR/SSG strategies, centralized API architecture, and database-level locking mechanisms, improving page load speeds and code maintainability

Technical Skills

Programming Languages: Java, Python, C++, JavaScript, SQL, HTML, CSS
Packages and Tools: PyTorch, TensorFlow, scikit-learn, Keras, OpenCV, Pandas, NumPy, Matplotlib, React, Spring Boot, Node.js, Flask, Git, Linux, Docker, REST APIs, CI/CD, MySQL, PostgreSQL, MongoDB

Publications

- Dimensionality Reduction Improves Genomic Prediction - *In Preparation* May 2025
- Enhancing Image Deblurring Algorithm Selection and Performance Evaluation for CCTV Jan 2024