# Venu Dattathreya Vemuru

LinkedIn GitHub

Email: venudattathreya@gmail.com
Mobile: +1-(706)-380-2548


## PROFESSIONAL SUMMARY


Computer Science graduate student with hands-on experience in GenAI applications, machine learning, and systems engineering. Proficient in prompt engineering and developing automated workflows that leverage AI capabilities across diverse domains. Skilled in Python-based data processing pipelines and optimizing large-scale systems. Eager to apply GenAI expertise to automate and enhance Systems Engineering workflows at Waymo.


## EXPERIENCE

- **Graduate Research Assistant — Genomic Prediction of Soybean Yield** Jan 2025 - Present
  *University of Georgia* *Athens, GA*
  - Engineered a pipeline using Python, PyTorch, and scikit-learn that improved genomic prediction accuracy by 84%, implemented dimensionality reduction techniques (Like, PCA and autoencoders) to transform over 10,000+ features into optimal subsets.
  - Developed software architecture using custom PyTorch neural networks to process genomic data, created chromosome-specific autoencoders that achieved a 32-dimensional latent space representation, improving top and bottom quartile hit rates by 30-73%.
  - Built a data processing system integrating Python and R to leverage specialized genomic packages, Orchestrated the evaluation of machine learning models (Like, Random Forest, and SVM) using GridSearchCV for hyperparameter optimization, reducing training time by 60% with GPU acceleration.
- **Graduate Research Assistant — Automated Maize Brace-Root Phenotyping** May 2025 - Present
  *University of Georgia* *Athens, GA*
  - Led a solo research project to automate maize brace-root phenotyping; defined scope and success metrics to replace manual measures.
  - Built the workflow: assembled ˜3.8k field images, curated 235 pixel-labeled masks into ˜4.2k tiles, standardized preprocessing, tracked experiments, and added scale-aware trait extraction with OpenCV.
  - Implemented and benchmarked 8 CNN variants in TensorFlow/Keras (U-Net, Attention U-Net, U-Net 3+, ResNet50-U-Net baselines); selected U-Net 3+ achieving 71.3% validation Dice and $R^2 = 0.86$ for stalk-width vs. manual, outperforming alternatives by 12–46 Dice points.
- **Cybersecurity Intern** Feb 2023 - May 2023
  *Corizo* *Bengaluru, India (Remote)*
  - Identified 50+ vulnerabilities; implemented patches improving system reliability by 25% and developed automation scripts reducing manual effort by 40%.

## PROJECTS

- **Image Caption Generator** - *TensorFlow, VGG16, LSTM, Python* [GitHub] Dec 2024
  - Created image captioning system combining VGG16 CNN for feature extraction and LSTM networks, achieving BLEU-1 score of 0.64; processed 8,000+ images extracting 4096-dimensional vectors.
  - Developed custom data generator with Keras/TensorFlow, implementing checkpoint-based training reducing model loss from 6.36 to 3.96 with 8,700+ word vocabulary.
- **Sky Hop** - *React, Java, Spring Boot, MySQL, JWT, JPA/Hibernate* [GitHub] Mar 2025
  - Engineered a complete booking system with REST API's for authentication, flight search, reservations, and ticket management using a layered architecture pattern for improved maintainability.
  - Designed a normalized relational database schema with six interconnected entities implementing transaction-safe services that maintained data integrity throughout booking flows.
  - Implemented security measures including stateless JWT authentication, centralized exception handling, and request validation, ensuring system reliability and protecting sensitive payment information.
- **Cinema Booking System** - *Next.js, React, Node.js, MongoDB/Mongoose, Tailwind CSS* [GitHub] Feb 2025
  - Architected end-to-end flows for movie discovery, showtime scheduling, seat selection, and secure payments with tokenized cards, reducing checkout abandonment by 35%.
  - Implemented 9+ Mongoose domain models with custom validation and atomic reservation logic that eliminated 90% of seat overbooking conflicts while supporting dynamic pricing scenarios.
  - Optimized performance with SSR/SSG strategies achieving 25% faster initial page loads and reduced code duplication by 40% through centralized business logic in API routes.

## TECHNICAL SKILLS

**AI & ML:** TensorFlow, PyTorch, Computer Vision, NLP, Prompt Engineering, ML Pipeline Design
**Systems & Testing:** CI/CD Pipelines, System Integration, Test Automation, Workflow Orchestration
**Programming:** Python, SQL, Java, JavaScript
**DevOps & Tools:** Docker, Git, Kubernetes, MongoDB
**Data Processing:** NumPy, Pandas, Data Transformation, Matplotlib, Scikit-learn

## EDUCATION

- **University of Georgia** — Athens, GA
  *Master of Science in Computer Science; GPA: 3.7* — *Aug 2024 - Dec 2026 (Expected)*
  - Coursework: Advanced Algorithms and Data Structures, Object-Oriented Programming, Database Management Systems
- **RMK Engineering College** — Chennai, India
  *Bachelor of Science in Computer Science; GPA: 3.74* — *Aug 2020 - May 2024*