

ARNAV SINHA

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EDUCATION

Vellore Institute of Technology, Vellore

2023 – 2027

B.Tech Computer Science (AI/ML) | CGPA: 8.54/10.0

Relevant Coursework: Data Structures & Algorithms, Machine Learning, Deep Learning, Computer Networks, DBMS, Operating Systems

ACHIEVEMENTS

IEEE CS VIT Hackbattle 2025 Hackathon – First Place | Won among 600+ participants with an innovative AI-powered solution

TECHNICAL PROFICIENCIES

- **Languages:** Python, Java, C/C++, JavaScript, TypeScript, HTML/CSS, SQL, GDScript
- **AI/ML & Data Science:** TensorFlow, Keras, PyTorch, scikit-learn, OpenCV, NLTK, spaCy, NumPy, Pandas, Matplotlib, Seaborn
- **Web Development:** React.js, Node.js, FastAPI, Flask, Streamlit, REST APIs, HTML5, CSS3, Responsive Design
- **Cloud & AWS:** EC2, Lambda, S3, RDS, DynamoDB, API Gateway, CloudFront, VPC, Route 53, IAM, CloudWatch, SageMaker, Cognito, SNS, SQS, ECS, Elastic Beanstalk
- **Tools & Platforms:** Git/GitHub, Docker, VS Code, Jupyter, Google Colab, Godot Engine, Linux
- **Databases:** MySQL, PostgreSQL, MongoDB, ChromaDB (Vector DB), Firebase, DynamoDB, RDS

KEY PROJECTS

LipReading Model

Python TensorFlow OpenCV Deep Learning Computer Vision

- Developing end-to-end deep learning pipeline using 3D CNNs and BiLSTM networks for lip reading
- Implemented sophisticated video preprocessing with frame normalization and temporal alignment
- Built custom CTC loss function for sequence-to-sequence learning with variable length outputs
- Achieved robust performance on video-to-text translation tasks

The Blinking Worlds (IEEE Hackbattle 2025 Winner)

Godot GDScript Game Design 2D Graphics

- Developed award-winning 2D puzzle-platformer game with unique blinking mechanics in Godot Engine
- Created parallel world navigation system with challenging spatial puzzles
- Implemented physics-based gameplay with timing and spatial reasoning elements
- Designed multiple levels with progressive difficulty and engaging mechanics

ClauseWise – Legal Document AI Assistant

Python FastAPI Streamlit RAG Google Gemini ChromaDB

- Built full-stack AI-powered legal document analysis platform with multi-language support for 13 Indian languages
- Implemented RAG pipeline with ChromaDB vector store and HuggingFace embeddings
- Integrated voice services using ElevenLabs TTS/STT for accessibility
- Developed real-time chat interface with source attribution and risk assessment features

Cowwnect

Python TensorFlow Transfer Learning Computer Vision Mobile

- Developed cow breed classification system using EfficientNetB3 with transfer learning
- Deployed via TensorFlow Lite for offline mobile use on Android devices targeting Indian farmers
- Implemented staged fine-tuning and data augmentation for improved performance

Customer Churn Prediction

Python scikit-learn Pandas Machine Learning

- Built end-to-end ML pipeline for customer churn prediction with feature engineering
- Trained multiple models including XGBoost and Random Forest with comprehensive evaluation metrics
- Deployed model with RESTful API for real-time predictions