Gaurav Chintakunta

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Education

University of Illinois at Chicago | Master of Science in Computer Science | GPA - 4.0/4.0 *Expected May 2026*
Coursework: Responsible AI Engineering, Neural Networks, Quantum Computing, Computer Algorithms, Data Science

JNT University Hyderabad | Bachelor of Technology in Computer Science *May 2024*
Coursework: Machine Learning, Design and Analysis of Algorithms, Data Science, BigData, Python App Programming

Experience

• **Graduate Researcher | GAN, Deep Learning, TensorFlow, Spatial Data Analysis** *Jan 2025 - Present*
University Of Illinois at Chicago, Computer Science Chicago, USA
- Contributed to Pix2Path, a GAN-based deep learning model, boosting pathology prediction accuracy by 30% in spatial data analysis.
- Enhanced spatial gene expression mapping by 25% using CNNs and Pix2Pix GANs with TensorFlow in team research.
- Designed scalable pre-processing pipeline for spatial omics datasets, cutting processing time by 40% in spatial data analysis.
- Enabled real-time model inference using TensorFlow for optimized deep learning workflows under Prof.Hao Chen.

Projects

• **AI - Research Assistant | Python, LangChain, GPT, Pinecone, RAG, Streamlit** [GitHub]
- Developed a RAG pipeline using LangChain, Pinecone, and GPT-3.5, improving semantic search accuracy by 20% for unstructured PDFs.
- Integrated chunking and Flan-T5 fallback in a Streamlit app, achieving 95% retrieval consistency across cloud and offline environments.
- Optimized document indexing with Pinecone, reducing query response time by 15% for large-scale corpora.
- Enabled citation-aware QA and summarization, processing 100+ documents with 90% answer grounding in source material.

• **Movie Recommendation Engine | Python, Docker, FastAPI, SVD++, Scikit-learn** [GitHub]
- Developed AI-powered movie recommendation system achieving 0.92 RMSE using SVD++ algorithm.
- Built scalable FastAPI application with Docker containerization, serving recommendations with < 200ms response time.
- Implemented matrix factorization techniques to handle sparse rating data and improve recommendation quality.
- Created end-to-end ML pipeline with automated model training and evaluation for continuous performance monitoring.

• **Fuzzion: A Fuzzy Logic Expression Language (DSL) | Scala** [GitHub]
- Designed domain-specific language (DSL) for fuzzy logic evaluation with 10+ operators using Scala.
- Implemented object-oriented programming features including class inheritance and dynamic dispatch across 500+ lines of code.
- Built advanced partial evaluation engine with 3 reduction rules for constant folding and expression simplification.
- Developed comprehensive test suite using ScalaTest achieving 90%+ code coverage of language features and edge cases.
- Created conditional execution system supporting nested scoping with 10+ expression types and variable binding.

• **Crime Type and Occurrence Prediction | Python, Django, SQLite, HTML, CSS, JS** [GitHub]
- Built Django web application for crime type prediction using machine learning algorithms on 50,000+ historical crime records.
- Developed dual-role system serving 2 user types (Remote Users and Service Providers) with role-based access control.
- Implemented Naive Bayes classification model achieving 85%+ accuracy for crime type prediction and occurrence analysis.
- Designed comprehensive database schema with 10+ tables handling crime datasets, user management, and model training results.
- Created interactive data visualization dashboard with 5+ chart types for crime statistics and trend analysis.

• **EnergyTrend Analytics: ML-Driven US Energy Analysis | Python, Scikit-learn, Keras, Matplotlib** [GitHub]
- Analyzed 530,000+ records of U.S. energy data (2001-2024) using EIA API with custom Python script for comprehensive trend analysis.
- Implemented Random Forest regression model achieving 77% R^2 accuracy for energy consumption prediction.
- Built machine learning pipeline processing multi-dimensional energy data with feature engineering for consumption forecasting.
- Developed data preprocessing framework handling missing values imputation and validation checks across 4 data dimensions (time, geographic, sectoral, fuel type).

• **David Chu's Restaurant Bistro | HTML, CSS, JavaScript, Bootstrap** [GitHub]
- Developed responsive restaurant website using HTML5, CSS3, and JavaScript with 5 modules demonstrating web development skills.
- Built interactive user experience with Bootstrap framework achieving 100% mobile responsiveness across all device breakpoints.
- Created dynamic JavaScript functionality including greeting systems and animated transitions enhancing user engagement by 40%.
- Implemented modular code architecture with 5+ reusable HTML snippets for menu categories, items, and dynamic content management.

Skills

- **Programming Languages:** Python, Scala, C, JavaScript, HTML, CSS
- **ML/DL & Vector Retrieval:** TensorFlow, PyTorch, Scikit-learn, Transformers, LangChain, Pinecone
- **Data Processing & Visualization:** NumPy, Pandas, Matplotlib, Seaborn, OpenCV
- **AI/ML:** LLMs, LangChain, PEFT, DSPy, RAGs, CNN, RNN, LSTM, Autoencoder, TF-IDF, Classification, Clustering
- **Data Science:** Data Mining, Text Mining, Preprocessing Pipelines
- **Tools & Platforms:** Tableau, Spark, Git, MySQL, Streamlit, GitHub

Affiliations

• **NSS Co-ordinator** | National Service Scheme - MREC Aug 2021 - May 2024
- Led community outreach initiatives through NSS, organizing clothing drives and food distribution programs for homeless populations.
- Coordinated multi-faceted social impact events including homeless assistance programs and community engagement activities.
- Mentored and onboarded new NSS members, developing comprehensive training modules for volunteer orientation.

• **Class President** | Department of Computer Science - MREC Aug 2020 - May 2023
- Served as key communication bridge between faculty and 300+ students department-wide for 4 consecutive years.
- Facilitated student engagement in academic and co-curricular initiatives while enhancing feedback mechanisms.
- Established peer mentoring initiative to assist first-year students with academic integration and transition support.

Certifications

• **Microsoft Azure Fundamentals: AZ-900**
• **Microsoft: Introduction to Programming using Python**
• **HTML,CSS,and JavaScript for Web Developers- Johns Hopkins University**