Akshat Karwa

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EDUCATION

Georgia Institute of Technology — Atlanta, GA

MS Computer Science - Machine Learning - **GPA: 4.0/4.0** — Graduation: May 2025

BS Computer Science - Intelligence, Information Internetworks - GPA: 3.89/4.0 — Aug 2021 - May 2024

Coursework: Deep Learning, Computer Vision, Robotics, Artificial Intelligence, Data Science & Analytics, Statistics, Algorithms, Information Security, Databases, Application Development, Computer Systems, Internet Systems, Networks

EXPERIENCE

Graduate Teaching Assistant — Atlanta, GA

Georgia Institute of Technology: CS 3630 Perception & Robotics — Aug 2024 – Present

- Supported 450 students by conducting office hours, offering guidance and helping with course material.
- Designed mobile robotics assignments and quizzes focused on path planning (RRT, A*), probabilistic robotics (SLAM, MCL), state estimation (Kalman, Particle, Bayes Filters), sensor fusion (LIDAR, Odometry), real-time control systems (PID), obstacle avoidance and trajectory optimization.

Software Engineer — Atlanta, GA

Vertically Integrated Project - Automated Algorithm Design - GitHub — Jan 2023 – May 2024

- Developed the EMADE (Evolutionary Multi-objective Algorithm Design Engine) framework, implementing a multi-island model with diverse objectives and dynamic migration topology that improved population diversity by 38% phenotypically and 11% genotypically, outperforming algorithms like NSGA-II and MOEA/D.
- Optimized framework performance, achieving a 18% improvement in convergence speed, 22% better objective coverage, and reducing computational overhead by 27% on the Georgia Tech PACE cluster.

SELECTED PROJECTS

Software Engineer - BuzzAI - Course Discovery System for Georgia Tech

- Built course recommender using transformer models (MiniLM, DistilRoBERTa) and FAISS, with custom filtering, collaborative profiling, and Llama model for generating topic descriptions, achieving 84.1% accuracy in course matching.
- Engineered data pipeline with custom web scrapers (BeautifulSoup, pdfplumber) and vector embedding architecture, processing 2,000+ courses and enabling adaptive recommendations with 90%+ relevance through user preference learning.

Data Scientist - COVID Forecasting with Exogenous Data Integration *GitHub*

- Engineered an epidemic spread forecasting system utilizing state-of-the-art models (SARIMA, Prophet, LSTM, RNN, SI, TBATS), integrating exogenous data across 1,674 days, reducing prediction error by 24% over traditional approaches.
- Optimized performance through strategic feature integration and combination analysis of 38 features including vaccination rates, mobility, health and economic indicators, achieving 31% improvement in prediction accuracy.

Machine Learning Engineer - Spotify Genre Classifier & Hit Predictor *GitHub*

- Analyzed Spotify data encompassing 38,000+ songs to develop a predictive model, achieving 87.3% accuracy in genre classification using Random Forest (F1 score: 0.88) and 96% accuracy in hit prediction.
- Conducted data pre-processing, explored dimensionality reduction techniques like PCA, t-SNE, and UMAP, applied ML algorithms, and created visualizations to uncover patterns in music genre and popularity trends.

Machine Learning Engineer - Voice Cloning Using Deep Learning *GitHub*

- Built a voice cloning system using YourTTS and TortoiseTTS, achieving exceptional voice replication (Mean Cosine Similarity: 0.982 & Mean MSE: 0.019) through architectural optimizations and effective fine-tuning.
- Refined a speaker encoder through multi-stage training on LJSpeech and VCTK datasets, achieving 0.4036 Mel-spectrogram similarity on 11 unseen speakers, reducing spectral distortion and enhancing synthesis naturalness.

Software Engineer - BeeHired – Job Aggregation Portal

- Created high-performance web crawler processing listings at 1.04s/post with 0.14s parsing speed for 100+ posts, and optimized storage to 0.08s/entry, through Selenium WebDriver implementation.
- Architected full-stack job platform using React/Express/MySQL processing 10,000+ posts in 24 mins, featuring 0.07s query response time, ghost job detection, and user-friendly multi-parameter filtering interface for personalized job search.

SKILLS

Programming:	Python, Java, R, C, MATLAB, JavaScript, SQL, HTML, CSS
Tools:	GitHub, Docker, MySQL, Node.js, React, Jupyter Notebook, OpenRefine, AWS, Azure
Libraries/Frameworks:	NumPy, TensorFlow, PyTorch, sklearn, pandas, Matplotlib, D3, Flask, Hadoop, Spark
Certifications:	Engineering Virtual Program (Goldman Sachs), The Complete JavaScript Course (Udemy)