Duy Nguyen

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Education

Georgia Institute of Technology **August 2022 – May 2025**
Bachelor of Science in Computer Science *Atlanta, Georgia*
GPA: 3.95/4.00

Relevant Coursework

- Data Structures
- Artificial Intelligence
- Machine Learning
- Deep Learning
- Computer Simulation
- Automata & Complexity
- Systems & Networks
- Military Simulation

Projects

Dry Weight Watchers App | *TypeScript, React Native, Python, SQL* | Emory University **August 2024 – current**

- Developed a multi-platform application to connect congestive heart failure patients with their doctor consisting of both a multi-platform mobile application developed with **React Native** and a desktop web interface developed with **React**.
- Implemented **RESTful API endpoints** via a **Django** backend enabling front-end users to record their weights, view data visualizations, edit account data, etc.
- Integrated **Twilio alert microservices** to signal to healthcare providers if a patient registered under their care records an alarming weight record.
- Securely handles user account data using **JSON Web Tokens** (JWT) to authorize users. Healthcare providers may securely access only their registered patients' weight records to monitor and contact info to connect.
- Actively deployed patient mobile app on iOS App Store & Google Play Store, provider website hosted using **AWS CloudFront + S3**, **EB**, and **RDS**. Supports a network of 40-60 healthcare providers and 1,000-1,200 patients.

Semantic Plot | *Python, React, Machine Learning* **Spring 2025 – current**

- Developed a **semantic search tool** utilizing **massive text embedding models** (MTEB) to accurately retrieve long-form novels based on a prompt of varying size.
- Engineered an automated system that **scrapes web fiction**, segments stories into optimal chunks, and vectorizes content via **feature extraction** for enhanced model performance.
- Integrated **cloud inference microservice** providers to deliver device–agnostic search capabilities, ensuring functionality with just a stable network connection.
- Actively deployed using **AWS EC2** and **RDS** leveraging **Cloudflare** for reverse proxy management. Responsive front-end built with **React** using **Vite + Mantine**.

Emotion-based Musical Generation for Reading | *Python, PyTorch, Machine Learning* **Spring 2025**

- Developed a two-stage pipeline that first performs **emotional labeling** on text and then **generates dynamic, mood-appropriate music** using machine learning algorithms to enhance the reading experience.
- Using Google's **GoEmotions** dataset, explored a variety of models such as **bag of words**, **CNN**, **LSTM**, **BERT-Transformers** and achieved a **50% macro-F1 score multi-labeling the 28 emotional categories** defined by Google.
- Leveraged a **transformer-based checkpoint** from the **EMOPIA** project to convert aggregated emotional probabilities (expressed as cumulative valence-arousal scores) into stylized piano MIDI compositions to evoke the emotions conveyed in text.

ed-triage-dispo | *Python, scikit-learn, keras* **Spring 2023**

- Utilized **machine learning** techniques to **perform medical triage** and predict patient medical condition urgency (5-class) and probability of being admitted vs. discharged from the emergency room (binary).
- Performed extensive **data processing** tasks such as: imputing missing values for important features, removing features with >50% null values, enumerating non-numerical categorical features to improve model predictive power.
- Applied **principal component analysis** (PCA) to **reduce dimensionality**, retaining only enough high-variance components to capture 90% variance and improve model efficiency.
- Compared performance across **multiple models** such as: **random forest**, **logistic regression + XGBoost**, and a **deep neural network**.
- Achieved upwards of 60-70% accuracy on **5-class classification** of triage level and upwards of 80-90% accuracy on discharge v. admittance **binary classification**, allowing for faster informed clinical decision-making.

Technical Skills

Languages: Python, Java, C++, C#, HTML + CSS, JavaScript/TypeScript, SQL
Developer Tools: VS Code, Android Studio, Vite, Expo, Docker, JIRA, Trello
Technologies/Frameworks: GitHub, React, React Native, AWS, Django