Aditya Kendre

Software Engineer
Machine Learning Engineer

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🖥 Skills

Python

Pytorch | Numpy | Scikit-Learn | Scipy | Pandas | Matplotlib | PostgreSQL | Flask | Alembic | Django | TensorFlow

JavaScript

React.js | Node.js | Express.js | Redux | Angular.js | Vue.js

Mobile Development

Flutter | React Native | Java | Swift

Machine Learning

SVM | Linner/Logistic Regression | Naive Bayes | Decision Tree | CNN | RNN | LSTM | Transformer | GAN | KNN

Other

Git/Github | Docker | Kubernetes | Java | C++ | HTML | CSS | Bash | AWS | Azure | Linux | GCP | Adobe Creative Cloud | Agile (Scrum) | LaTex

Soft Skills

Bilingual Communicator (English, Marathi) | Public Speaker | Leader

🎓 Education

Penn State University
Computer Science
2021-2025

Full-Stack Developer Nanodegree
Udacity
2021

- Created server-side and data-driven web applications for large-scale operations.
- Learned database and API development with access control.
- Deployed containerized applications using Docker and Kubernetes on AWS.

Deep Learning Nanodegree
Udacity
2020

- Implemented low-level models and backpropagation from scratch in Python.
- Learned architectures like CNNs, RNNs, GANs, and Transformers in PyTorch.
- Applied techniques to image recognition, sequence generation, and image generation problems.

ⓘ Projects

Heart Sound Abnormality Detection App
Github
Summer 2021

- Created a novel deep learning model using PyTorch/Pytorch Lightning that converts Electrocardiograms (ECGs) into Heart Sounds (PCGs) and predicts abnormalities/arrhythmias in heart sounds.
- Published an app using Flutter that records the heart sounds and creates a prediction from them.
- Developed a fastAPI for serving the model to the app and implemented a PostgreSQL database for storing the heart sounds.

Node-Based Wikipedia Graph
Website | Github
Spring 2021

- Developed a React.js-based graph (data type) that displays connections between related articles.
- Used the Wikipedia API and web scraping techniques to extract data from Wikipedia articles.

Dog Breed Classifier
Github
Summer 2020

- Built a pipeline to process real-world, user-supplied images in Pytorch. Given an image of a dog, the algorithm will identify an estimate of the canine's breed. If supplied an image of a human face, the code will identify the resembling dog breed.

💼 Work Experience

Lehigh University
Machine Learning Researcher Intern
Aug. 2020 - Present | Bethlehem, PA | Prof. Lifang He

- Led the development of models for EEG connectome analysis using architectures like ResNets and DenseNets.
- Created a system for preprocessing, training, logging, and testing the model on datasets using PyTorch/PyTorch Lightning and Weights & Biases.
- Collaborated among team members using Git/Github for version control.

Freelancer
Full-Stack Developer
Aug. 2020 - May 2021 | Mechanicsburg, PA

- Created websites using front-end frameworks such as React.js and Angular.js.
- Designed API endpoints using Node.js, Express.js, and Mongoose.
- Built end-to-end websites using cloud-based frameworks like Wix with WixCode (Velo).

📄 Publications

ECG Based Heart Sound Synthesis for Increased Abnormality Classification
Summer 2021 | Paper

- Implementation of Adversarial Machine Learning (ML) and Computer Audition (CA) in combination with heart sounds provide ease of access to everyone who has a device capable of recording audio.
- The new design is comprised of two subsystems; one is based on the relationship between Electrocardiograms (ECGs) and PCGs, and the other between PCGs and arrhythmias. The first subsystem uses a Generative Adversarial Networks (GAN), in which both generated and real PCG signals are fed into the discriminator for classification. In subsystem two, ECG spectrograms are dimensionally reduced, then constructed into PCG signals using a transGAN.
- The proposed method introduces significant features and architectures that aid in abnormality detection. Using such techniques, the model was able to detect abnormalities and arrhythmias in heart sound with 34% better accuracy than existing methods.

Graph Kernel Learning for Connectome Analysis
Winter 2020 | Paper

- Led the development of models for EEG connectome analysis using architectures like ResNets and DenseNets.
- This paper presents a novel graph-based kernel learning approach for EEG-derived connectome analysis. Specifically, we demonstrate how to leverage the naturally available structure within the graph representation to encode prior knowledge in the kernel.