KAARTIKEYA PANJWANI

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Education

New York University, New York, NY — Sep 2023 - May 2025
Master of Science, Computer Science — GPA: 3.6

Vellore Institute of Technology, Tamil Nadu, India — Jul 2019 - Aug 2023
Bachelor of Technology, Computer Science and Engineering — GPA: 3.5

Experience

Software Developer, NYU Courant Institute of Mathematical Sciences, New York, USA — May 2024 – Dec 2024

- Developed the **AI4Health website** using **React, HTML, CSS, and WordPress** to showcase ongoing research at NYU Courant Institute of Mathematical Sciences, NYU Center for Data Science and NYU Langone Health
- Designed **professor profile pages** and **research project pages** to highlight individual researchers and their work
- Collaborated with designers and backend developers to create seamless and visually appealing user interfaces
- Utilized project management tools like **Jira** and **Notion** to track progress and meet deadlines efficiently

Web Development Project Lead, Namhya Foods, Gurugram, India — Jan 2022 – Jul 2023

- Led the design and deployment of a scalable Shopify-based **e-commerce** platform for the fast-growing wellness startup, using **HTML**, **CSS**, **JavaScript**, and **Shopify**, resulting in a 1.8x increase in online sales
- Built a custom checkout workflow integrated with **Shiprocket** for automated order fulfillment, and configured Shopify Payments and third-party gateways to support multi-currency international transactions
- Designed and maintained product catalogs, automated inventory syncs, and implemented on-page **SEO**, schema markup, and social media metadata—driving a **37%** increase in organic reach and customer acquisition

Projects

Image Generation Using Diffusion Models, New York University, New York, USA — Sep 2024 – Feb 2025

- Developed a full-stack ML web app for personalized image generation using **Stable Diffusion XL**, fine-tuned with **DreamBooth** and **LoRA** to create subject-specific visuals from as few as 5 images
- Integrated **gradient checkpointing**, **mixed-precision training**, and **8-bit optimizers** to fine-tune SDXL efficiently within Colab's memory constraints, achieving a **CLIP score of 36.4**
- Engineered a scalable backend with **Flask + LoRA-SDXL pipeline**, deployed via **ngrok**, and a responsive **Gradio** frontend enabling real-time prompt-based generation with style control
- Conducted comparative benchmarking with **DALL·E Mini** and **SD v1.5** on fidelity, prompt alignment, and inference speed; demonstrated multi-platform use cases (LinkedIn, Instagram, Snapchat)

MERN Stack E-Commerce Application, New York University, New York, USA — Sep 2024 – Feb 2025

- Developed a secure and scalable MERN (**MongoDB, Express.js, React,** and **Node.js**)-based e-commerce platform with **RESTful APIs, JWT authentication** with **refresh/access tokens**, and **role-based access control** (RBAC)
- Implemented dynamic product/category management, **Redux**-powered cart, **Stripe**-integrated checkout, and a coupon system with backend validation
- Built an admin dashboard for orders, inventory, and sales analytics using **MongoDB** aggregations; enhanced performance with **Redis** caching
- Designed a responsive **React** + **Tailwind** frontend with **lazy loading**, **code splitting**, and **secure API practices** for production-grade performance

Home Credit Default Risk, New York University, New York, USA — Sep 2024 – Dec 2024

- Designed and implemented an end-to-end **machine learning pipeline** to **predict loan defaults** using XGBoost, **improving AUC from 0.67 to 0.78** and enhancing risk assessment for financial institutions
- Conducted extensive **data preprocessing**, including **handling missing values, outlier detection,** and **feature scaling**, then engineered 100+ features from applicant demographics, credit history, and behavioral data
- Optimized feature selection using **Random Forest importance ranking**, reducing dimensionality from 1,638 to 498 features while maintaining predictive performance and computational efficiency
- Addressed severe **class imbalance** (92% non-default, 8% default) through resampling techniques and cost-sensitive learning, ensuring model robustness, and validated performance through **cross-validation** and Kaggle submission

Skills

Programming Languages: JavaScript, TypeScript, HTML, CSS, Python, C++
Full Stack Development: React, Redux, Tailwind CSS, Node, Express, Django, MongoDB, MySQL, PostgreSQL, Redis
Other Software/Tools: Git, GitHub, Postman, JIRA, AWS, CI/CD Pipelines, Docker, AGILE methodology