SWAYAM SHAH

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Education

Veermata Jijabai Technological Institute, Matunga	**Aug. 2023 - Present**
B.Tech in Computer Engineering. CGPA - **8.73**	
Prakash College of Commerce and Science, Kandivali	**Aug. 2021 - May. 2023**
MHT-CET - **99.99%ile (RANK 16)** — HSC - **82.17%**	

Work Experience

Google Summer of Code 2025 ⧉ | *GNU Octave* ⚙   **May. 2025 -Present**

- Implemented MATLAB-compatible **KDTreeSearcher**, **ExhaustiveSearcher**, and **hnswSearcher** classes in GNU Octave, enhancing nearest-neighbor (KNN) and range search functionality. Optimized **KDTree** performance by $\sim$**3−5×** (reducing search latency from **273s → 0.8s** for $n=1000, d=10$) and resolved legacy inefficiencies (GitHub **#151** ⚙).
- Conducted **30+ performance benchmarks** across varying parameters (dataset size, dimensions, distance metrics) to validate scalability, achieving **95%+ accuracy** vs. exhaustive search. Automated testing for *knnsearch/rangesearch* methods, reducing query time by **50%** for high-dimensional data ($d=200$).

Projects

Text-to-Speech ⚙ | *Python, PyTorch*   **Jul. 2024 - Oct. 2024**

- Built a pipeline-based **Transformer Text-to-Speech (TTS)** system achieving a **Mean Opinion Score (MOS)** of **4.39 ± 0.05** for naturalness.
- Created a **Pytorch** model that performed $\sim$**4.25 times faster** than traditional autoregressive models.
- Trained on the **LJSpeech dataset** (**13,100** audio-text pairs) and utilized a **CBHG post-processing network** to convert mel spectrograms to raw audio with the **Griffin-Lim algorithm**.

Coding Dashboard ⧉ ⚙ | *Reactjs, Nodejs, MongoDB*   **Oct. 2024 - Jan. 2025**

- Designed a **React** dashboard tracking **500+** coding questions (LeetCode/Codeforces). Cut lookup time by **70%** with dynamic filters (difficulty/tags/status).
- Integrated a **Node.js** backend handling **30+ requests/s**, delivering real-time analytics (streak, topic-wise accuracy).
- Sped-up **MongoDB** queries to reduce read latency by (indexing solved questions by userID/timestamp).

ThreatShield: AI-Powered Malware Detector ⧉ ⚙ | *Reactjs, Flask, Python, LangChain*   **Apr. 2025 - Jun. 2025**

- Engineered a multi-format malware detection engine analyzing **7+** file types (**PE/PDF/Office/APK**) using ensemble ML models, achieving $\sim$**90%** accuracy on **VirusTotal** dataset with **YARA** integration
- Developed LangChain-powered analysis **chatbot** reducing threat investigation time by $\sim$**30%** through **natural language Q&A** about file behaviors and suspicious activities
- launched Python **CLI tool** processing files in <**10s** and React dashboard generating interactive **PDF reports**, **deployed** on Vercel.

Technical Skills

Languages: C++, Python, JavaScript, Octave
Developer Tools: Git/Github, VS Code, Google Colab, Kaggle, Jupyter
Technologies/Frameworks: PyTorch, Tensorflow, Reactjs, Nodejs

Relevant Coursework

- Data Structures
- Algorithms Analysis
- Linear Algebra
- Computer Architecture
- Operating Systems
- Artificial Intelligence
- Machine Learning
- Database Management Systems
- Object Oriented Programming

Responsibilities

Sector Representative, Digital in | *Pratibimb, Cultural Committee at VJTI*   **Aug. 2023 - Aug. 2024**

- Led **digital outreach** for **Pratibimb VJTI**, boosting social media **engagement** by **40%**.
- Managed online presence and **collaborated** with teams to **promote events** achieving **1000+** interactions per post.

Sector Executive, Execution in | *Pratibimb, Cultural Committee at VJTI*   **Aug. 2024 - Present**

- **Planned** and **executed 5+** cultural events for **Pratibimb VJTI**, driving **campus engagement**.
- Managed **logistics**, volunteers, and promotional resulting in **500+ attendees** at **flagship events**.

Open Source Head | *Project X, VJTI*   **Jun. 2025 - Present**

- Mentored over 200 junior students and organized workshops attended by more than 200 participants.