PIYUSH SATTI

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SKILLS

Languages	Python, Java, JavaScript/TypeScript, SQL
Full-stack	React, FastAPI, Spring Boot, GraphQL (Strawberry), SQLAlchemy
AI/Automation	n8n, LangGraph, RAG, PyTorch, SpeechBrain
Data	Redux, PostgreSQL (Supabase), MongoDB, Redis
DevOps & CI	Git/GitHub, Docker, GitHub Actions

EDUCATION

Concordia University (GPA: 3.62/4.3) Montreal, Quebec, Canada
Master of Science, Applied Computer Science *Sept. 2023 – Aug. 2025*

Thapar Institute of Engineering and Technology (GPA: 8.96/10) Patiala, Punjab, India
Bachelor of Engineering, Electronics and Computer Engineering *Jun. 2017 – Jun. 2021*

EXPERIENCE

Teaching Assistant Montreal, Quebec, Canada
Concordia University *Jan. 2025 – Apr. 2025*

- Programmer on Duty (Java) for Object-Oriented Programming II with more than 400 students. Guided students to understand OOP concepts and their implementation. Helped with course projects and program debugging.
- Conducted classes for roughly 20 students each week, and a revision lecture for 40 students covering the following topics: File I/O, Polymorphism, Recursion, Exception Handling, Abstract Classes and Interfaces, Inheritance.

Research Assistant Patiala, Punjab, India
Thapar Institute of Engineering and Technology *Aug. 2019 – Apr. 2023*

- Researched algorithm-based techniques for restoring corrupted images. Published 4 academic papers and achieved state-of-the-art performance. Implemented 40 cutting edge research papers in the process.
- Achieved exceptional improvement in the signal-to-noise ratio, resulting in the several papers being published in peer-reviewed journals, including the esteemed IEEE:SPL *(70+ citations).* DOI: **10.1109/LSP.2020.3016868.**

PROJECTS

Community Event Signup & Approval Platform (Python & JavaScript) github.com/piyushsatti/nonagon
FastAPI, GraphQL (Strawberry), PostgreSQL (Supabase), SQLAlchemy, React *Nov. 2025 – Present*

- Built a **GraphQL-first full-stack platform** for community event postings and sign-up workflows, implementing schema-driven queries and mutations on FastAPI (Strawberry) with a React client.
- Implemented **username/password authentication** with secure password hashing and **JWT-based sessions**, plus resolver-level RBAC to secure approvals, edits, and visibility rules.
- Modeled core workflows in **PostgreSQL** with SQLAlchemy, enforcing referential integrity and pagination patterns enabling infinite-scroll views across events, sign-up requests, approvals, and notifications.
- Delivered a **dashboard and analytics UI** and an interactive **relationship graph view** (zoom, pan, scroll) in React to visualize linked entities and surface engagement signals.

Speech-Based Parkinson's Classification Pipeline (Python) github.com/piyushsatti/parkinson-detector
Python, PyTorch, SpeechBrain *Mar. 2025 – Apr 2025*

- Built an end-to-end **speech classification research pipeline** to distinguish Parkinson's vs control speech using the Italian Parkinson's Voice and Speech dataset.
- Implemented **dataset ingestion and manifest generation** by scanning the audio corpus, computing durations, assigning binary labels, and exporting SpeechBrain-ready JSON annotations with reproducible train/valid/test splits.
- Trained and compared **multiple model families** using SpeechBrain recipes: embedding baselines (Xvector, ECAPA-TDNN) and fine-tuned self-supervised encoders (Wav2Vec2, HuBERT, WavLM), with consistent checkpointing and evaluation logging.
- Built an analysis workflow for **audio feature inspection and dataset statistics** (waveforms, spectrograms, mel features, MFCCs, duration and energy distributions) to validate preprocessing assumptions.

Turn-Based Strategy Game Engine & Map Editor (Java) github.com/piyushsatti/risk-emulated
Java, JUnit, Graph Data Structures, MVC, GoF Patterns (State/Command/Strategy), Git *Jan. 2024 – Apr. 2024*

- Built a **turn-based strategy game engine** with map-editor and gameplay modes, orchestrating player setup, country assignment, reinforcement calculation, and round-robin order execution.
- Implemented a **State**-driven phase controller and **Command**-style parsing/validation to gate actions by phase and convert terminal input into structured operations.
- Developed a **graph-based map builder and validator** enforcing world connectivity and continent constraints to ensure only legal maps are loadable and playable.
- Structured the codebase with **MVC separation** and **Strategy**-based policy hooks to support pluggable AI behaviors and targeted JUnit test scenarios.