# Dhruv Khatri

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## Skills

**Languages:** C++, JavaScript, TypeScript, Python
**Frontend:** React, Next.js, Tailwind CSS
**Backend:** Node.js, Express, PostgreSQL, MongoDB, tRPC, REST
**Tools:** Git, GitHub, Linux

## Projects

### numNet — Deep Learning Framework from Scratch

*Tech Stack: Python, NumPy*
*GitHub: numNet*

- Built a PyTorch-like deep learning framework from scratch using NumPy.
- Implemented automatic differentiation, core layers, and standard optimizers.
- Designed modular architecture for educational experimentation and deep learning fundamentals.

### Smart Mirror

*Tech Stack: Raspberry Pi, Next.js, Web Speech API, Google Gemini API*
*GitHub: smartMirror*

- Reduced boot time by ~40%, achieving sub-20s startup on Raspberry Pi.
- Delivered real-time weather, calendar, and news widgets in Next.js with 1-min auto-refresh.
- Enabled 10+ voice commands (e.g., "show news") via Web Speech API; Gemini API replies in <500ms.
- Cut memory usage by ~35% vs MagicMirror$^2$ using tree-shaking and optimized bundling.

### Snake Game

*Tech Stack: C++, Raylib, CMake, Catch2, Doxygen*
*GitHub: SnakeGame*

- Engineered a modular Snake game with layered architecture (core logic, render, game loop).
- Applied OOP patterns (Game Loop, Command) and S.O.L.I.D. principles for extensibility.
- Integrated unit testing (Catch2), automated builds (CMake), and documentation (Doxygen).
- Enhanced gameplay with moving food mechanics, multi-level layouts, and responsive UI.

## Achievements

- **Competitive Programming** — Solved 250+ problems across **LeetCode** and **Codeforces**
- **Hardware Hackathon (2023)** — Developed a Smart Mirror prototype with Raspberry Pi within 24 hours.
- **Game Jam (2023)** — Created a 2D platformer with 5+ levels in a 24-hour sprint.

## Education

**Bhagwan Parshuram Institute of Technology** Sept 2022 – June 2026
*Bachelor of Technology in Electronics and Communication Engineering*
*CGPA: 6.55/10*

**Siddhartha Public School** Graduated: May 2022
*Senior Secondary Education (Class XII) — CBSE Board*
*Percentage: 87%*