Fenil Modi

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Ahmedabad, Gujarat, India

Education

Silver Oak University — Ahmedabad, Gujarat
Bachelor of Technology in Computer Engineering — *Aug 2022 – Aug 2026*

Technical Skills

Programming Languages: Python, C/C++, JavaScript, SQL
Web Technologies: React.js, Node.js, FastAPI, Tailwind CSS, REST APIs
AI/ML Frameworks: TensorFlow, PyTorch, Scikit-learn, Qiskit
Scientific Computing: Skyfield, PyVista, NumPy, Pandas, Matplotlib
Cloud & DevOps: AWS, GCP, Git, GitHub, CI/CD
Databases: SQL, NoSQL (MongoDB)
Specialized Skills: Orbital Mechanics, Satellite Data Processing, TLE Propagation, Geospatial Analysis

Projects

Space Debris Tracking System | *Python, Skyfield, TensorFlow, React, NASA APIs* — Ongoing

- Engineered end-to-end space situational awareness platform to monitor and predict orbital debris trajectories using real-time TLE datasets from NASA and NORAD
- Developed machine learning models for collision probability prediction and debris classification, achieving 85%+ accuracy in trajectory forecasting using time-series analysis
- Built custom 3D visualization engine with PyVista for real-time satellite tracking and orbital propagation, processing 10,000+ orbital objects
- Implemented REST API backend with FastAPI for efficient data querying and integrated React-based dashboard for mission-critical decision support

Quantum-Enhanced AES Encryption | *Python, Qiskit, Cryptography, NumPy* — Completed

- Designed hybrid cryptographic system combining AES-256 with quantum-random key generation using IBM's Qiskit framework
- Conducted comprehensive security analysis measuring entropy distribution, avalanche effect, and bit diffusion properties
- Demonstrated 40% improvement in cryptographic randomness compared to standard PRNG methods through statistical testing
- Published simulation results showing enhanced resistance to brute-force and pattern-based attacks

Diablex - Medical Data Intelligence Platform | *Node.js, React, MongoDB, Bluetooth APIs* — Ongoing

- Architected full-stack healthcare platform integrating Bluetooth glucose monitors with cloud infrastructure for real-time patient monitoring
- Developed automated data pipeline processing 1,000+ daily glucose readings with RESTful APIs for seamless device-to-cloud synchronization
- Created physician dashboard with data visualization, trend analysis, and automated report generation reducing diagnosis time by 60%
- Implemented secure authentication and HIPAA-compliant data handling using encrypted storage and role-based access control

Key Strengths

Domain Expertise: Space technology, scientific computing, AI/ML systems, full-stack development
Problem-Solving: Strong analytical skills combining physics, mathematics, and computational thinking
Innovation Focus: Experience building production-grade systems from research concepts to deployment
Collaboration: Effective communicator seeking mentorship and team-based learning environments

Professional Interests

Aerospace systems engineering, machine learning infrastructure, scientific software development, satellite data analytics, quantum computing applications, intelligent data platforms, space situational awareness