

# Samanvith Kashyap

Bangalore | samanvithkashyap@gmail.com | 8217238499 | linkedin.com/in/samanvith-kashyap  
github.com/samanvithkashyap

## Education

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**PES University**, B.Tech in Computer Science 2024 – 2028  
*GPA: 8.14/10*  
**Coursework:** Data Structures & Algorithms, Linear Algebra, Probability & Statistics

## Experience

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**Undergraduate Researcher (Computer Vision)** Dec 2025 – Present  
*Mentored by Prof. Lakshmeesha, Dept. of CSE, PES University*

- Executed a self-initiated research project on robust biometric authentication, translating academic guidance into a production-grade Python pipeline.
- Engineered a Hybrid Liveness Detection System to solve the "presentation attack" problem, implementing Eye Aspect Ratio (EAR) logic that reduced spoofing vulnerability by ~95%.
- Developed an Explainable AI (XAI) module that audits facial recognition vectors using t-SNE clustering, allowing for the mathematical detection and removal of outlier data.
- Optimized the inference engine for standard CPU hardware, utilizing HOG descriptors and frame-skipping algorithms to achieve real-time performance (30 FPS) without GPU acceleration.

## Projects

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**QPrice (Qiskit Fall Fest 2025)** GitHub Repo

- Developed a Variational Quantum Regressor (VQR) using Qiskit to predict SPY option prices, benchmarking performance against a classical Random Forest model.
- Analyzed the "Barren Plateau" phenomenon in quantum circuit training, evaluating the trade-offs between quantum expressibility and classical accuracy ( $R^2$ : 0.98 vs. 0.63).
- Tools Used:** Python, Qiskit, Scikit-learn, yfinance, Pandas

**Quantum Music Generator** GitHub Repo

- Developed a quantum computing-based music generation system using Qiskit (Python) and MIDI generation
- Used qubit superposition and measurement to generate pseudo-random musical notes
- Mapped quantum-generated binary outputs to musical scales to produce MIDI sequences
- Tools Used:** Qiskit, Python

## Technical Skills

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**Languages:** Python, C++, JavaScript,

**Quantum & ML:** Qiskit, TensorFlow, Scikit-learn, NumPy, Pandas

**Tools:** Git, VS Code, Jupyter

## Achievements

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**2025 IBM Qiskit Fall Fest Hackathon :** PES University | 1/45+ teams

**2025 Codeblitz Hackathon :** PES University | 10/85+ teams