

# RUCHIR KALOKHE

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## EDUCATION

### PES Modern College of Engineering (PES MCOE)

Bachelors of Engineering, Artificial Intelligence and Data Science

Pune, India

Aug 2023 – Jun 2027

### Hutchings High School & Junior College

Pune, India

High School Diploma, Graduation Year: 2021

Sep 2008 – May 2021

- Percentage: 84%

## PROJECTS

### Quantum Key Distribution (QKD) Simulator

- Developed two variants: A TypeScript implementation using Next.js for web-based BB84 protocol simulation, focusing on cryptographic security in web environments
- Next.js based: [https://github.com/ruxir-ig/QKD\\_sim](https://github.com/ruxir-ig/QKD_sim)
- Python implementation using Streamlit and IBM Qiskit library to model secure communication protocols
- Qiskit based: <https://github.com/ruxir-ig/qkd-sim-py>

### VERBALIZE Lip-Reader

- Built a deep learning model with TensorFlow for lip reading from video inputs, enabling silent speech recognition
- [https://github.com/ruxir-ig/VERBALIZE\\_Lip-Reader](https://github.com/ruxir-ig/VERBALIZE_Lip-Reader)

### Fresh Blog (Collaborator)

- Co-created and contributed to a blog showcasing technical write-ups and project documentation focused on AI, ML, and software engineering
- <https://github.com/aryamaddel/frsh>

### GitGet Backend (Collaborator)

- Contributed to a TypeScript-based backend for a Git repository management tool, enhancing API functionalities
- <https://github.com/NevroHelios/gitget-backend>

### SAR Image Colorization - Smart India Hackathon 2024 project

- Implemented a deep learning model using PyTorch and GANs to colorize grayscale Synthetic Aperture Radar (SAR) images into realistic RGB representations via encoder-decoder architecture
- Trained on paired SAR and optical datasets with features like custom generator, CUDA support, and TensorBoard visualization

### RAG 2.0 (Collaborator) - Ranked in top 200 at Hackrx Hackathon

- Contributed to a Retrieval Augmented Generation (RAG) system with Gradio for intelligent document analysis and natural language querying
- Features include multi-format document support (PDF, DOCX, etc.), semantic search with FAISS/ChromaDB, and context-aware answers using LangChain and OpenAI/Hugging Face models
- <https://github.com/KrishnaNaicker/RAG-2.0>

### MineX (Collaborator)

- Currently developing an innovative project for Smart India Hackathon 2025
- Problem Statement: AI-Driven Life Cycle Assessment (LCA) Tool for Advancing Circularity and Sustainability in Metallurgy and Mining
- <https://github.com/PurveshMali/MineX>

## SKILLS

- **Soft Skills:** Communication, Collaboration, Problem-solving, Adaptability, Time Management
- **Programming Languages:** Python, C++, JavaScript, TypeScript, React
- **Frameworks & Tools:** PyTorch, TensorFlow, Qiskit, Jupyter Notebook, zsh, Oh My Posh, Streamlit, Next.js, Gradio, LangChain
- **Domains:** AI/ML, Quantum Computing, Deep Learning, Data Science, Web Development