RITHUL KAMESH

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EDUCATION

PES University Bengaluru, India
B.Tech in Electronics and Communication Engineering *Aug 2023 – May 2027*

BGS National Public School (CBSE) Bengaluru, India
Class X & XII *2019 – 2023*

RESEARCH EXPERIENCE

Photonics and Quantum Technology Lab, PES University Bengaluru, India
Undergraduate Research Assistant *Nov 2023 – Present*

- Modeling quantum photonic systems using Hamiltonian-based approaches
- Developing numerical solvers integrating quantum evolution with electromagnetic simulation
- Investigating robustness and stability in multi-level quantum systems

Teaching Assistant – Non-Linear Optics and Quantum Technology PES University
Jan 2026 – May 2026

RESEARCH PROJECTS

Robust Qutrit Control under Systematic Errors
Ongoing theoretical investigation extending composite pulse techniques from SU(2) to SU(3) systems, focused on stability-preserving control design and fidelity optimization.

Hybrid Hamiltonian Modeling of Photonic Lattices
Computational study of local photonic bandgap formation using tight-binding and Bloch-mode frameworks within a unified Hamiltonian model.

CLASP: Respiratory Audio Classification
Ongoing deep learning research for automated biomedical signal classification using MFCC feature extraction and comparative neural architectures.

ENGINEERING EXPERIENCE

Studojo Remote
Freelance Software Engineer *June 2025 – Present*

- Designed and deployed containerized microservices using Kubernetes and PostgreSQL
- Built structured AI-assisted document generation workflows
- Implemented authentication, asynchronous processing, and production-grade deployment pipelines

SELECTED TECHNICAL WORK

Photonical – Quantum Photonics Simulation Platform
C++ framework integrating Hamiltonian-based quantum evolution with 3D vectorial FDTD modeling. Implemented Crank–Nicholson solvers and CPU-parallel architecture using OpenMP.

Docproc – Structured Document Analyzer
Python-based framework for region detection and structured extraction from digital and scanned documents.

TECHNICAL SKILLS

Languages: C++, Python, CUDA, Go
Tools: Eigen, PyTorch, Qt, OpenMP, Kubernetes
Focus Areas: Quantum Photonics, Quantum Control, Computational Electromagnetics, Machine Learning

ACHIEVEMENTS

Hack Night 7.0 – Third Place — Oct 2025
Speaker – Snowflake User Meetup Chennai — Jun 2025
Hack Night 6.0 – Second Place — Oct 2024