

AMOGH DODDAGADDUVALLI PRASANNA

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EDUCATION

University of Maryland, College Park

M.Eng in Computer Science Equivalent, GPA: 3.9/4.0

Aug 2025 - May 2027

College Park, MD

Visvesvaraya Technological University

B.E. Computer Science and Engineering, GPA: 3.4/4.0

Jun 2019 - Jul 2023

Hassan, IN

Relevant Coursework: Object-Oriented Design, Data Structures and Algorithms, Machine Learning, Discrete Mathematical Structures, Quantum Information Processing, Quantum Complexity, Quantum Error Correction

RESEARCH/WORK EXPERIENCE

University of Maryland, College Park

Graduate Research Assistant Adv. by Dr. Shabnam Jabeen

Jan 2026 - Present

College Park, MD

- **ML for Qudit Unitary Decomposition (Adv. by Dr. Tanay Roy - SQMS, Fermilab):** Developing machine learning methods for unitary decomposition on superconducting transmon qudits, aiming to compile arbitrary target $SU(d)$ unitaries into high-fidelity sequences of hardware-native gates.
- Studying transmon qudit physics, including multi-level anharmonic structure and leakage, to build hardware-aware training objectives and benchmark learned decompositions against analytic baselines.
- **Quantum Generative Modeling:** Developed a Quantum Circuit Born Machine (QCBM) in JAX for quantum generative modeling of hadron momentum distributions from Pythia 8 simulations, reaching Kullback–Leibler (KL) divergence below 0.14 via just-in-time compiled variational optimization; applied zero-noise extrapolation and dynamical decoupling on IBM's FakeBrisbane backend to mitigate hardware-induced degradation of the learned distribution.
- Engineered a hardware-efficient Qiskit ansatz reaching a transverse-momentum Kolmogorov–Smirnov (KS) score of approximately 0.075 with only 32 native two-qubit (ECR) gates under FakeBrisbane noise, keeping the design within IBM Brisbane deployment constraints.
- Led circuit-depth and entanglement ablations comparing trainable RXX and fixed CX gates, identifying configurations where RXX scaled better; diagnosed and resolved critical defects in the quantum machine learning data pipeline.

Mercedes-Benz Research and Development India

Software Engineer

Mar 2023 - Aug 2025

Bengaluru, IN

- Developed scalable software components in **C++** and **Python** within an agile engineering team, achieving a **10x reduction** in data processing time by applying advanced data structures and Object-Oriented Design principles.
- Continuously enhanced **Operational Excellence (OE)** by building and maintaining a cloud-hosted API Gateway on **AWS**, successfully streamlining **SQL** and **NoSQL** backend databases for enterprise release operations.
- Identified and resolved complex software defects through rigorous code reviews, log analysis, and metrics examination, leveraging **AI tools for development productivity** to accelerate troubleshooting workflows.
- Designed customer-centric eSign software, handling secure data classification, storage, and management in strict accordance with company compliance policies.

SOFTWARE ENGINEERING & OPEN-SOURCE PROJECTS

Open-Source Algorithmic Decoding Toolkit | Python, C++, Open-Source, Version Control

Jun 2026 - Present

- Contributed to an open-source software project by designing maintainable algorithm frameworks in **Python** and **C++** to simulate and decode complex topological graphs.
- Collaborated via Git version control systems to review pull requests, examine benchmarking metrics, and continuously enhance the operational stability of the shared codebase.

TechPilot Voice Assistant (YC x Cactus Hackathon) | Python, AI Tools, APIs

April 2026

- Envisioned and launched a customer-centric, voice-controlled virtual assistant utilizing **Python** and natural language processing libraries to intelligently automate localized system tasks and enrich user workflows.
- Engineered and debugged real-time REST API connections to dynamically fetch, parse, and store external data.

TECHNICAL SKILLS

Quantum Computing: Qiskit, Qiskit Aer, IBM Quantum (FakeBrisbane noise models, native ECR gates), Variational Quantum Algorithms, Quantum Circuit Born Machines, Error Mitigation, hardware-efficient ansatz design

Machine Learning & Optimization: JAX (JIT, autodiff), PyTorch, generative modeling, quantum-classical hybrid workflows, SPSA and gradient-based optimization, statistical benchmarking (KS, KL divergence)

Scientific Computing: NumPy, SciPy, Pythia 8, numerical methods, probability, linear algebra, data visualization

Programming & Tools: Python, C++, TypeScript, Go, SQL, Bash, Git/GitHub, Linux, REST APIs

ACHIEVEMENTS

- **Programs & Hackathons:** Selected for RQS Simulation Summer School 2026 (UMD) and IBM Global Summer School 2026; **Winner**, TechPilot Hackathon; **Runner-up**, GenAI Hackathon (Mercedes-Benz R&D India).