

# PREETHAM CHANDRA TIKKIREDDI

## Quantum Software Engineer

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Experienced software engineer with a dual background in computer science and physics, specializing in quantum computing. He can skillfully navigate the entire quantum computing stack, fostering collaboration within multidisciplinary teams.

## Education

### Master of Science in Physics - Quantum Computing

*University of Wisconsin - Madison*

Madison, WI

09/2022 - 05/2024

### Bachelor of Technology in Computer Science and Engineering

*Shiv Nadar University*

Noida, India

06/2015 - 04/2019

## Research Experience

### Soley Research Group

*Prof. Micheline Soley, Dept. of Chemistry*

UW - Madison

Fall 2023 - Present

- Simulate scattering in quantum systems using R-Matrix theory and split-operator Fourier transform.
- Port Fortran code to Python and boost performance by leveraging GPUs using CuPy.

### Quest @ UW - Madison

*Prof. Swamit Tannu, Dept. of Computer Sciences*

UW - Madison

Spring 2023

- Understanding Security Risks on Multi-Tenant Quantum Computers. Under review: USENIX 2024.
- Benchmark different transpilation techniques & error mitigation techniques.

## Experience

### Icosa Computing

*Quantum Engineer - Intern*

New York, NY

06/2023 - 09/2023

- Parallelized backtests with AWS Batch causing x12 speedup and reducing costs.
- Refactored prototype code to implement best practices and optimized performance.
- Configured repos, pipelines, automations, network, and security on AWS.
- Created a demo of our tool using FastAPI and Angular to attract investment.

### Wisconsin Quantum Computing Club

*Quantum Software Mentor*

Madison, WI

07/2019 - 06/2022

- Plan and organize talks and events like Qiskit Fall Fest 2023 at UW - Madison.
- Teach basics of quantum computing, Qiskit, Linear Algebra, and applying to grad school.

### Dell Technologies

*Software Engineer - II, Dell Seller Application, Payments & After Point of Sale (APOS)*

Hyderabad, India

07/2019 - 06/2022

- Led the development of a PyQt desktop app for placing bulk orders. Saving hundreds of sales rep hours per week.
- Actively participated in architectural discussions, setting up API contracts and code review.
- Added support for three new payment methods, split payment and many new features for APOS.
- Ported payments and APOS from monolithic application to microservices and helped enable Tier-3 deployments.
- Built Splunk dashboards that reduced defect turnaround time by 50% and actively monitored defects.
- Triaged over a hundred defects across orgs within Dell as part of a non-prod SWAT team.
- Participated in stretch projects and hackathons where I applied machine learning to solve computer vision problems.

## Hackathons & Certificates

Second Place Winner - QED-C Student Poster Presentation

Evanston, IL

*Understanding Crosstalk-based Side Channel Attack on Multi-Tenant QC*

03/2024

iQuHACK 2024 - iQuISE - MIT: Moody's Portfolio Optimization Challenge

Boston, MA

*Simulate scattering in quantum systems using R-Matrix theory*

02/2024

BIG Q Hackathon 2023 - CQE and QuantX: General Atomics & Quantinuum

Chicago, IL

*Quantum Simulation of Scattering Towards Computation Fusion Reaction*

09/2023

IBM Certified Associate Developer - Quantum Computation using Qiskit v0.2X

01/2024

Qiskit Global Summer School - Quantum Excellence

09/2023

IBM Quantum Challenge: Spring 2023

05/2023

## Latest Projects

Surface Codes using Qiskit

Spring 2023

Vehicle Routing Problem using Layered Variational Quantum Eigensolver (VQE)

Fall 2022

## Skills

Computer: Python (Qiskit, NumPy, Pandas, etc), C#, Angular, Java, JS, Julia, Git, AWS, CI/CD, REST API