RAMA KHALIL

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PROFESSIONAL SUMMARY

An MSc student in Computational Physics with a very solid background in physics, math, statistics, programming and data analysis. Through my graduate studies, I'm deepening my expertise in computational modeling, numerical analysis, and quantum computing, and I'm genuinely excited about the chance to apply what I've learned to solve real-world problems.
I love working through complex challenges and figuring things out, which is why I'm drawn to roles where I can use my analytical skills and problem solving abilities. I'm committed to learning as much as I can and to finally bring my knowledge and curiosity to a research-driven environment.

EDUCATION

Master of Science: Computational Physics, *Stockholm University* 08/2024 – Present
Stockholm

Bachelor of Science: Physics, *Stockholm University* 08/2021 – 06/2024
Stockholm

- ***GPA: 4.7 of 5.0***
- ***Bachelor Thesis:*** *Numerical Solutions to the Time-Dependent Schrödinger Equation*

Eng. program: Materials design, *KTH Royal Institute of Technology* 08/2020 – 06/2021
Stockholm

RESEARCH PROJECT

MSc Thesis/Research Project, *Nordita – Nordic Institute for Theoretical Physics* 11/2025 – Present
In collaboration with ***Rigetti Computing*** Stockholm

- Investigating decoherence mechanisms in superconducting transmon qubits using numerical simulation and quantum system modeling tools.
- Developing synthetic noise models and dissipation profiles for quantum circuits.
- Applying machine learning techniques to characterize decoherence signatures and predict coherence lifetimes.
- Working with Dr. Alexander Balatsky and collaborators at Rigetti to integrate theoretical models with synthetic data.

Projects

B-Spline collocation method 05/2025 – 06/2025
Constructed spline-based numerical solutions to solve the Poisson Equation, assessed convergence across grid resolutions.

Metropolis Monte Carlo Sampling 03/2025 – 04/2025
Designed and analyzed MCMC sampling strategy to study equilibrium distributions.

Variational Monte Carlo Simulation of the Quantum Harmonic Oscillator 02/2025 – 03/2025
Implemented VMC to approximate ground state energies and analyze convergence behavior.

Molecular Dynamics Simulation of Interacting Particles 01/2025 – 02/2025
Built MD simulation using Verlet integration; evaluated energy conservation and stability.

WORK HISTORY

Ica

Truck driver 06/2025 – 08/2025
Stockholm

Truck driver 06/2024 – 08/2024
Stockholm

Truck Driver 06/2022 – 08/2022
Stockholm

Espresso house, *Barista* 06/2021 – 08/2021
Stockholm

Nytida, *Personal assistant* 06/2020 – 08/2020
Lödöse

SKILLS

Python
NumPy, SciPy, Pandas, Matplotlib

R
Statistical Analysis & Data Handling

Computational Modeling
MC, MD, Numerical PDEs

Statistical Modelling
Bayesian inference · Parameter estimation · Distribution analysis

Data Analysis & Visualization

Linux/Unix Systems

Microsoft Office

Quantum Programming
Qiskit, QuTiP

C++
Simulations & Numerical Methods

Mathematical Modelling
Differential equations, variational methods, stochastic processes

Numerical Methods

Problem solving

LATEX

Languages

English

Arabic

Kurdish

Swedish

Turkish