HRISHIKESH BELAGALI

Undergraduate Student

East Lansing
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SUMMARY

Undergraduate CS and Math double major interested in high performance computing, Monte Carlo methods, Quantum Algorithms and other optimization techniques

SKILLS

Languages: Python, LaTeX, JavaScript, C++

Packages: NumPy, PyTorch, MatPlotLib

Softwares: LAMMPS, OVITO, pyMOL

EDUCATION

2022 - 2024 — **High School Diploma** — **Sri Kumarans Children's Home**
Secured 4th rank in graduating class
Awarded Best in Scientific Temper

2024 - — **Computer Science (B.S)** — **Michigan State University**
Enrolled full time
Current GPA: 4.0

2024 - — **Mathematics Advanced (B.S.)** — **Michigan State University**
Enrolled full time
Current GPA: 4.0

CONFERENCES

2020
IISc, Bengaluru

12th Biennial Lake Conference
Presented a case study on the destruction and conservation efforts of Sarakki Lake
Secured 3rd place and awarded Sahyadri Young Ecologist of the Year

PROJECTS

Python
OVITO
pyMOL

Genetic Annealing to Determine Protein Structures — **github.com**
Hybrid genetic annealing algorithm to determine protein structures through the optimization of Irbäck's off-lattice model energy equation (RMSD < 3.0). Use of molecular dynamics to simulate protein folding.

Python

Helium Ground State Wavefunction Determination — **github.com**
Determination of the ground state wavefunction of Helium and ground state energy using variational quantum Monte Carlo and genetic annealing.

Python

Adiabatic Quantum Computation — **github.com**
Adiabatic quantum evolution algorithm to determine the ground state of tranverse-field Ising models.

Python

Quadratic Unconstrained Binary Optimization — **github.com**
Stochastic tunneling-enhanced simulated annealing for solving QUBO-type problems.

Python

Monte Carlo Integration — **github.com**
Monte Carlo integration with importance sampling to numerically evaluate complex integrals.

Python

Langevin Monte Carlo — **github.com**
Metropolis-adjusted Langevin algorithm for sampling from intractable probability distributions.

Python

Lattice Grid Optimization — **github.com**
Designed and implemented a simulated annealing algorithm to visualize how cooling schedules affect clustering in a two-color lattice grid.

Python
RESTful API

AP Survey Automation and Analysis — **github.com**
Created a Google Forms API script to generate over 30 AP exam surveys, collecting 1,000+ responses.
Led a team to analyze survey data, identifying popular resources for 50,000+ AP students.