

Abhiroop Ghosh

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EDUCATION

Michigan State University

PhD in Electrical and Computer Engineering

CMSE Graduate Certificates in High Performance Computing and Computational Modeling

East Lansing, MI, USA

Jan. 2018 – Dec. 2022

Jadavpur University

Bachelor of Electrical Engineering (BE)

Kolkata, WB, India

Aug. 2012 – July 2016

EXPERIENCE

Algorithm Developer

Energy Exemplar

- Developed and maintained the PLEXOS Engine.
- Worked on optimization problems involving short-term, medium-term and long-term energy plans.

July 2025 – Present

Atlanta, GA, USA

Senior Software Developer

Open Systems International (Aspen Technology)

- Developed three software applications for generation management systems and electricity markets such as ERCOT.
- Formulated and solved constrained mixed-integer and non-linear optimization problems with over 10,000 variables.
- Integrated existing products with commercial solvers like Gurobi and CPLEX using C and Python APIs.
- Researched methods to mathematically model energy storage and renewable resources in power dispatch problems.
- Implemented over 10 major new features, fixed over 200 product defects, and increased unit test coverage to 90%.

Jan. 2023 – July 2025

Medina, MN, USA

PhD Research Assistant

Michigan State University

- Research areas: multi-objective optimization, meta-heuristics, operations research, machine learning.
- Delivered three multi-year industry research projects from ideation to implementation.

Jan. 2018 – Dec. 2022

East Lansing, MI, USA

PhD Teaching Assistant

Michigan State University

- Designed undergraduate course materials, trained three student sections, managed a lab, and graded assignments.

Jan. 2021 – May 2021

East Lansing, MI, USA

AI-driven Design Exploration Intern

Siemens

- Created a multi-level optimization architecture to optimize cost and reliability of a battery-based microgrid over one or more years that .
- Boosted rate of return on energy storage investments to over 40%.

May 2019 – Aug. 2019

Princeton, NJ, USA

Project Engineer - AI & Cognitive Computing

Wipro Digital

- Developed AI-based handwritten text detection software to automate the processing of pharmacovigilance forms.

July 2016 – Nov. 2017

Bengaluru, KA, India

PROJECTS

Optimization Visualizer | *Python, Plotly, Dash, HTML, CSS, Git* | github.com/abhiroopghosh71/IK-EMO-Visualizer

- Developed a full-stack web application with nine interactive widgets using the Dash framework.
- Implemented interactive 2-D and 3-D scatter plots, parallel coordinates plots, graph structures.
- Designed regression models to obtain hidden inter-variable relationships among optimal solutions.

Solid Rocket Design Optimization | *C, Python, Cython, Git* | github.com/abhiroopghosh71/solid-rocket-design-optimization

- Engineered a multi-objective optimization framework to solve a large-scale solid rocket motor design problem.
- Achieved a 30% improvement in solution quality compared to the state-of-the-art on datasets provided by NASA.

TECHNICAL SKILLS

Languages: C/C++, Python, MATLAB, HTML, CSS.

Libraries: Jupyter Notebook, NumPy, Pandas, Scikit-learn, Matplotlib, Plotly, Dash, h5py, Cython.

Developer Tools: Git, SVN, VS Code, Visual Studio, PyCharm, GitHub Actions CI, Jenkins, unittest, pytest, CUnit.

Optimization: CPLEX, GUROBI, HEEDS, CVXPY, COIN-OR.

Others: Linux, High-Performance Computing (HPC), HDF5, Object-oriented programming, Agile workflow, LaTeX.

PUBLICATIONS AND PEER REVIEW

- 4 journal and 6 conference publications (708 citations as of July 2024).
- 22 reviews for 5 journals.