

APAAAR SHANKER

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RESEARCH STATEMENT

Automating and Accelerating Knowledge Discovery using AI

PROJECTS

Python Library for Materials Knowledge Discovery (PyMKS)
National Institute of Standards and Technology

📅 May 2017 – Ongoing 📍 Gaithersburg, MD

- 🌐 <https://github.com/auag92/pymks>
- Worked on the development of an open source python software, currently available on conda-forge.
- Implemented novel analytics algorithms in functional and distributed form using PyToolz and Dask, to leverage multicore and multithread capabilities of modern processors.
- Wrapped the implementation in scikit-learn API

High Throughput Analytics of Molecular Datasets

Georgia Tech, National Science Foundation

📅 Sep 2016 – ongoing 📍 Atlanta, GA

- Development of computer vision based feature generation and visualization workflows for nanoporous macromolecules.
- Deep learning based predictive linkages for high throughput selection of optimal materials for desired performance attributes.

Discovering Equations using Deep Neural Networks

Georgia Tech, National Institute of Standards and Technology

📅 Jan 2017 – ongoing 📍 Atlanta, GA

- Working on a DNN model using tensorflow and keras, with constrained and free filters to learn the Partial Differential Equations linking material microstructures to mechanical properties.

High Performance Multi-Physics P.D.E Solver

Indian Institute of Science

📅 Sep 2014 – May 2016 📍 Bangalore, India

- 🌐 https://github.com/auag92/lattice_boltzmann_phase_field
- Developed a fully parallelized, finite difference, multiphysics solver in C using MPI to simulate alloy solidification in presence of fluid flow on an HPC cluster.

Course Projects

Georgia Tech

📅 Aug 2016 – Dec 2017 📍 Atlanta, GA

- A Q-Learning based AI agent to execute stock trading.
- A neural net model predicting minimum energy surface for copper.
- A automated database exploration and caching system in C++.

EDUCATION

P.h.D. Candidate, Computational Science and Engineering

Georgia Institute of Technology

📅 Aug 2016 – June 2020

Master of Science

Indian Institute of Science, Bangalore

📅 Aug 2015-June 2016 📍 First Class

Bachelor of Science

Indian Institute of Science, Bangalore

📅 Aug 2011-June 2015 📍 First Class

SKILLS & STRENGTHS

OS: Linux, Intermediate Systems Knowledge

languages: Python, C, C++

tools: scikit-learn, numpy, scipy, pandas

Dask, Pytoolz, Keras, TensorFlow

HONORS

🏆 J. N. Tata Endowment Scholarship for Higher Education Awarded in 2016

🏆 INSPIRE Scholarship
Awarded by Dept. of Science and Tech., Govt. of India, 2011-2016

EXTRACURRICULARS

🏆 Senator, Georgia Tech Student Government Association

🏆 Chief-Coordinator, Sponsorship and Outreach, IISc Techno-Cultural Fest

CONFERENCES

CHIMAD, Phasefield V

Northwestern University

📅 Aug 2017, Conducted tutorial

MLSE 2018

Carnegie Mellon University

📅 June 2018, Presented poster