

## Education

### *Purdue University, West Lafayette*

PhD in Aeronautics and Astronautics .....	May'18 - May'21
MS in Physics and Astronomy .....	Aug'19 - May'21
MS in Aeronautics and Astronautics .....	Aug'16 - May'18

### *Indian Institute of Technology (IIT), Hyderabad*

B.Tech in Mechanical Engineering (Honors) .....	Aug'12 - May'16
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## Work Experience

### *Altair Engineering, Troy, MI* ..... 17 May'21 - Present

Sr. Software Developer - High Performance Computing with *Brian Janes (Senior Director)*

Created an asynchronous event-driven method/system for resource allocation, resource monitoring, and resource scheduling for massively parallel/distributed high performance computing systems.

### *Mentor Graphics (Siemens), Wilsonville, OR* ..... 6 May'19 - 6 Sep'19

R&D Calibre Design-to-silicon Intern with *Dr. Fedor Pikus (Chief engineering scientist)*

Research in development of quantum algorithms for Electronic Design Automation (see patents [1, 2]). Our work focused on identifying, adapting, developing, and applying quantum algorithms to solve NP-hard problems arising in circuit design and verification.

### *Purdue University, West Lafayette, IN* ..... 1 Jan'17 - 15 March'21

Research Assistant with *Dr. Jingwei Hu, and Dr. Alina Alexeenko (Associate Dean)*

Research in development of numerical methods for solving high dimensional partial differential equations on massively parallel architectures (see monographs [3-5] and [National Science Foundation Grant #1854829](#) based on my Master's thesis).

## Research interests

High performance computing, Reinforcement Learning, Quantum computing, Numerical analysis.

## Patents

- [1] [Limited basis quantum particle definitions in applications of quantum computing to electronic design automation processes](#), (2020), US Patent 10,846,448.
- [2] [Adaptive penalty term determinations in applications of quantum computing to electronic design automation processes](#), (2020), US Patent App. 16/688,028

## Research monographs

- [3] [Isogeometric schemes in rarefied gas dynamics context](#), *Comput. Methods Appl. Mech. Eng.* **383**, 113926 (2021).
- [4] [Non-linear Boltzmann equation on hybrid-unstructured non-conforming multi-domains](#), *J. Comput. Phys.* **450** (2022).
- [5] [An entropy stable scheme for the non-linear Boltzmann equation](#), *J. Comput. Phys.* **463** (2022)

## General Skillset

*Programming:* C++, Python, Javascript, Tcl, Solidity

*Tools/Frameworks:* Tensorflow, PyTorch, Unity, Qiskit, OpenFOAM, ZeroMQ, React

- Experience with programming in Python, C++ (8+ years).
- Experience with parallel and distributed computing: MPI, CUDA, OpenMP, JAX.
- Experience with cloud computing: containers and micro-services design.
- Experience with decentralized computing: Solidity, Smart-contracts, NFTs.
- Experience with development of quantum algorithms and quantum software stacks.
- Experience with PDE based machine-learning models and reinforcement learning.
- Experience with development of numerical schemes for solving partial differential equations.
- Experience with finite element, isogeometric schemes, multi-physics design, simulation, and analysis.
- Experience with writing performance portable codes, profiling (LLVM sanitizers, valgrind, udb, gdb).
- Proficient working in a Linux/UNIX environment; git/subversion/p4, build/test systems, testing/release processes.