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Education

- **North Carolina State University** — Raleigh, NC
  Applied Math PhD (GPA: 4.0) — *Aug. 2020 - Present*
  - (Aug. 2021 - Present) — RA for Alen Alexanderian via NSF-DMS-2111044
  - (Aug. 2021) — Passed Qualification Exams (Matrix Theory, PDE, Analysis)
  - (Aug. 2020 - May 2021) — Recipient of the Siewert Fellowship
  - Coursework: Analysis I/II, PDE I/II, Matrix Theory I/II, Modeling I/II, Probability I, Uncertainty Quantification, Computational Inverse Problems, Advanced Functional Analysis
- **New York University** — New York, NY
  B.A. Joint Mathematics and Computer Science, Classics Minor — *Sep.2016 - May.2020*
  - (In Major GPA: 3.657)
  - Relevant undergraduate courses: Algorithms, Chaos and Dynamical Systems, Computer System Organization, Operating Systems, Honors Algebra I/II, Honors Analysis I/II, Honors Linear Algebra, Honors Probability Theory, Numerical Computation, Topology.
  - Relevant graduate courses: Algebra, Basic Probability, Convex and Nonsmooth Optimization, Finite Element Method, Fundamental Algorithms, Geometric Modeling, High Performance Computing, Methods of Applied Math, Numerical Methods I/II, Partial Differential Equations.
- **University of Maryland** — College Park, MD
  Visiting Student (GPA: 3.925) — *Summer 2017,2018*
  - Coursework: Complex analysis, Number theory, Partial Differential Equations, Introduction to Artificial Intelligence.

Projects and Activities

- **Math REU: Imperfect Periodic Patterns** — Athens, OH
  Ohio University — *June 2019 - August 2019*
  - I joined a research team under professor Qiliang Wu, and another undergraduate Mason Haberle from Berkeley in researching the field of pattern formation.
  - Our team specifically set out to prove nonlinear stability of the 2D Swift-Hohenberg equation at the zigzag boundary, and as of now we've completed the proof and the paper is in the draft stages.
  - The challenge here was mostly on how to adapt known techniques first to the Swift-Hohenberg equation, and second to higher dimensions. This was mostly a conceptual difficulty in the functional analysis framework surrounding the current research which we had to resolve.
- **Tutor and TA at Courant** — New York, NY
  NYU — *Sep. 2017 - May 2019*
  - Worked as a Tutor and TA to Professor Siegel at NYU for his undergraduate basic algorithms and graduate fundamental algorithms course.

- Hosted office hours, final exam study sessions, and worked on some of the course materials.

- **HOGWILD!**
  (NYU) Convex and Nonsmooth Optimization *Apr. 2020 - May 2020*
  - For a class final project, I looked into a lock-free parallel stochastic gradient descent implementation, HOGWILD!.
  - Implemented the algorithm, and did a case study on the convergence and efficiency analysis. The goal was the to try and study the induced asynchronous noise as a function of bandedness in order to apply them to banded matrices arising from a discretization of a Poisson equation, but COVID-19 cut the project short.
  - Implementation with Eigen and OpenMP in C++.
  - Link to the report.

- **Parareal**
  (NYU) High Performance Computing and Numerical Methods II *Apr. 2019 - May 2019*
  - For a class final project, I decided to look into parallel techniques for solving ordinary differential equations, in particular the parallel-in-time algorithm, *Parareal*.
  - For this project, I implemented and analyzed this algorithm, and further tested it's scaling properties on the HPC cluster Prince here at NYU.
  - Heavy use of Eigen and OpenMP, it's a header only library. Written in C++
  - Link to the report.

- **Algebraic Point Set Surfaces Implementation**
  Geometric Modeling *Apr. 2018 - May. 2018*
  - For a class final project, I implemented the theory in the paper *Algebraic Point Set Surfaces* by Gaēl Gunnebaud and Markus Gross from ETH Zurich.
  - The Paper presented an alternative method to take a point cloud to a triangularized mesh, and another method to estimate normals from a point cloud using algebraic fitting of a sphere.
  - This was mostly a challenge in comprehension of the paper and implementation, notably fighting with Eigen to try and constuct and solve the sytems in an efficient manner.
  - Heavy use of the libraries Eigen, libigl, and nanoflann. Written in C++.

- **First Robotics Team Member, Team 2849: Ursa Major** Columbia, MD
  Hammond High School *Sep. 2012 - Present*
  - A robotics team; every new year they gather for a challenge created by FIRST Robotics to build a robot in six weeks.
  - I worked as a build-team / programming-team flex member and team captain during my student years, and now I help as a programming and design mentor during their season.
  - Has managed to consistantly reach eliminantion and championship rounds at the regional level.
  - Link to their Github

Skills

Programming Languages: C, C++, Julia, Matlab, Python and a little Mathematica.

Libraries and Technologies: Num/Scipy, FEniCS, OpenMP, MPI, HPC Tooling (slurm, etc.), CUDA, Linux (have been using for over 8 years, currently on Fedora).

Languages: English, Latin, Broken spoken Hindi

Minor Mechanical Fabrication Skills