John **Barbish**

Graduate Research Assistant · Graduate Teaching Assistant

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Education

Ph.D. in Mechanical Engineering

Blacksburg, Virginia

Virginia Tech

Aug. 2018 - Exp May 2023

- Future Professoriate Graduate Certificate

B.S. in Physics, B.S. in Mechanical Engineering

Blacksburg, Virginia

Virginia Tech

Aug. 2014 - May 2018

- Honor Scholar

Teaching Experiences

Graduate Student Instructor (ME 3124)

Virginia Tech, Blacksburg, VA

Department of Mechanical Engineering

Fall 2019 - Spring 2020

- Teaching an average class size of 50 students on classical thermodynamics (a junior level mechanical engineering course)
- Writing course lectures, homework, and exams to enhance student understanding
- Rapidly adapted class structure from traditional to online setting during Coronavirus outbreak

Graduate Teaching Assistant for Fluid Mechanics

Virginia Tech, Blacksburg, VA

Department of Mechanical Engineering

Fall 2018

- Generated grading rubric and graded weekly homework assignments for 140 students
- Answered student questions to improve their understanding of fluid mechanics during weekly office hours

Research Experiences

Graduate Research Assistant

Virginia Tech, Blacksburg, VA

Department of Mechanical Engineering

Fall 2018 - Present

- Analyzed high dimensional systems with dynamical systems theory and numerical techniques
- Developed codes for simulating and analyzing both continuous and discrete time dynamical systems

Summer Research Intern

Los Alamos, NM

Los Alamos National Laboratory

Summer 2018

- Developed parallel algorithms for estimating macroalgae growth across ocean models
- Learned computational modelling techniques for shock-hydro code applications

Undergraduate Research Assistant

Virginia Tech, Blacksburg, VA

Department of Mechanical Engineering

Fall 2016 - Spring 2018

- Analyzed chaotic behavior of coupled map lattice systems with covariant Lyapunov vectors
- Characterized the statistical properties of coupled map lattices.

Undergraduate Research Assistant

Virginia Tech, Blacksburg, VA

Virginia Bioinformatics Institute

November 2014 - December 2015

- Connected and characterized the publication practices of scientists suspected of duplicate grant funding
- Searched for additional grants by the scientists suspected of grant fraud

Extracurricular Activities

President

Virginia Tech, Blacksburg, VA

Mechanical Engineering Graduate Student Council (MEGSC)

February 2020 - Present

- Founded peer mentoring program for incoming grad students
- Used $4000 budget to maximize community building amongst 300 ME grad students
- Organized outreach and technical events for prospective and current grad students

Associate *Virginia Tech, Blacksburg, VA*

Graduate Academy for Teaching Excellence *October 2019 - Present*

- Cross-disciplinary graduate students dedicated to improving our teaching abilities

Wheel Part Holder *Virginia Tech, Blacksburg, VA*

Formula SAE *September 2016 - May 2018*

- Refined the manufacturing procedure of carbon fiber wheels for fornula style race car
- Developed classical laminate models of composite undergoing various loading cases

Skills

Programming Julia, Python, MATLAB, C++, LaTeX, Git, JAVA, Django, HTML

CAD/CAE NX for part modeling, assembly, and manufacturing, Inventor

Manufacturing Manual and CNC Mill and Lathe, Carbon fiber layups, curing, and post-processing

Honors & Awards

2022 **Pratt Fellowship,** Virginia Tech *Blacksburg, VA*

2014-2018 **Dean's List: 8 semesters,** Virginia Tech *Blacksburg, VA*

2016 **Tau Beta Pi (Engineering Honor Society),** Virginia Tech *Blacksburg, VA*

2016 **Sigma Pi Sigma (Physics Honor Society),** Virginia Tech *Blacksburg, VA*

2016 **Robert C. Richardson Memorial Scholarship,** Virginia Tech *Blacksburg, VA*

2016 **Harry B. Gilbert Merit Scholarship,** Virginia Tech *Blacksburg, VA*

2016 **Bayport Beard/Bennett Memorial Scholarship,** Virginia Tech *Blacksburg, VA*

2012 **Eagle Scout,** Boy Scouts of America *Chesapeake, VA*

Presentations

Poster Presentation *Virginia Tech, Blacksburg, VA*

Fall Fluid Mechanics Symposium *October 2018*

- Quantifying High Dimensional Chaos with Covariant Lyapunov Vectors

Poster Presentation *Denver, CO*

70th Annual Meeting of the APS Division of Fluid Dynamics *November 2017*

- Probing the Chaotic Dynamics of Fluids using Insights from Coupled Map Lattices
- `http://meetings.aps.org/link/BAPS.2017.DFD.KP1.99`

Poster Presentation *Virginia Tech, Blacksburg, VA*

Fall Fluid Mechanics Symposium *November 2017*

- Probing the Chaotic Dynamics of Fluids using Insights from Coupled Map Lattices