Nick Derr

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EDUCATION

HARVARD UNIVERSITY
PhD Applied Mathematics
2022 | Cambridge, MA

HARVARD UNIVERSITY
SM Applied Mathematics
2019 | Cambridge, MA

CAMBRIDGE UNIVERSITY
MASt Mathematics
2016 | Cambridge, UK
Part III of the Mathematical Tripos

UNIVERSITY OF WISCONSIN
BS Appl Math, Engr and Phys
2015 | Madison, WI
Double Major: Astronomy–Physics
Certificate: Computer Science
Certificate: Business

SKILLS

PROGRAMMING
Python • C++ • Open MPI • OpenMP
Matlab • Mathematica • Shell • LaTeX
JavaScript • Perl • Gnuplot • Java

MATHEMATICAL MODELING
Data-Driven Inference • Fluid Dynamics
Solid Mechanics • Viscoelasticity
Finite Elements • Perturbation Methods

COMMUNICATION
Data Visualization • Technical Writing
Public Speaking • Active Listening

ABOUT ME

EXPERIENCE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY — Cambridge, MA
Instructor of Applied Mathematics — Jul 2022–present
- Developed novel methods for data-driven inference of jellyfish neural dynamics
- Designed and taught courses in applied mathematics and scientific communication

PRIMES Research Mentor — Jan 2023–Dec 2023
- Managed high school student's research project via weekly progress meetings

HARVARD UNIVERSITY — Cambridge, MA
Graduate Research Fellow — Aug 2016–May 2022
- Analyzed biological swimming methods using **custom C++ finite element solver**
- Created first continuum erosion model capable of producing branching patterns
- Co-wrote **RMT3D**, a C++ package simulating behavior of soft immersed solids
- Developed new methods for simulation of cell interiors and other porous media

Teaching Fellow — Aug 2017–May 2022
- Planned and led recitations for applied mathematics and engineering courses

NASA GODDARD SPACE FLIGHT CENTER — Greenbelt, MD
Research Intern — Jun 2014–Aug 2016
- Observed lunar exospheric potassium emission at McMath–Pierce Solar Telescope
- Developed Matlab and Python library to process low signal-to-noise observations

UNIVERSITY OF WISCONSIN — Madison, WI
Physics Research Assistant — Sep 2012–Jun 2014
- Improved and implemented Python algorithm for processing astronomical data
- Modeled layout of proposed mobile observatory using 3D CAD software

Exploring Engineering Summer Camp Counselor — Jun 2011–Aug 2013
- Led middle school students in hands-on engineering projects and activities

Computer Lab Monitor — Sep 2010–May 2015
- Supervised users and logged attendance at Social Sciences computer lab

HONORS

FELLOWSHIPS
2019	Harvard–NSF MathBio Grad Fellowship	3 yr, 50% support
2016	NDSEG Fellowship	3 yr, full support, 200/USA
2015	Marcus L. Urann Fellowship	6/Phi Kappa Phi
2014	Hilldale Undergrad Research Fellowship	100/UW students

AWARDS
2018 Certificate of Distinction in Teaching
2015 Theodore Herfurth Award
2015 AMEP Leadership Prize
2010 Academic Excellence Scholarship

SELECTED PUBLICATIONS
Flow-driven branching in a frangible porous medium	PRL	17 citations
Reciprocal swimming at intermediate Reynolds number	JFM	9 citations
Eulerian simulation of complex suspensions and biolocomotion ...	PNAS	5 citations