

Research interests: Social justice applications of data science, reduced-order modeling, data-driven modeling, machine learning, modal decompositions, transport-dominated physics, traveling waves, fluid dynamics

Education

University of Washington

2016-2021

Ph.D. in Mechanical Engineering, M.S. 2018

Seattle, WA

Thesis: Data-Driven Reduced-Order Modeling for Symmetrical Systems

Advisors: Steven Brunton (Mechanical Engineering) and J. Nathan Kutz (Applied Mathematics)

Seattle University

2012-2016

B.S. in Mechanical Engineering, Minor in Mathematics

Seattle, WA

Senior Design project with Ingersoll Rand, resulting in patent

Research advised by John Carter (Mathematics), supported by Clare Boothe Luce Foundation Undergraduate Research Award

Teaching

Instructor

DATA 5310 **Data Visualization** F23, F22

DATA 5901 **Capstone I** W23

DATA 5902 **Capstone II** S23

DATA 5322 **Statistical Machine Learning II** S23, S22

DATA 3310 **Data Visualization** F22

MATH 1335 **Calculus II** W22, F21

Capstone Advisor

MSDS 23.1 **Liya LaPierre, Karthika Selvaraj, Aishwarya Saibewar, and Radhika Magaji**

Donor Database Analysis and Recommendations, Camp Korey

MSDS 23.3 **Prateek Kakkar, Ramgopal Reddy Putta, and Xuanzhi Li**

A Data Curation System and Predictive Model for Unconfined Concrete Strength, DeSimone Consulting Engineers

Publications

In Progress

Small-Town Police Accountability: Challenges and Recommendations

Statistics and Public Policy

C Kelling, A Haensch, **A Mendible**, S Brooks, A Wiedemann, M Aminian, W Hasty, J Higdon

Under review 2023

Preprint available at SocArXiv: [10.31235/osf.io/2gyuv](https://doi.org/10.31235/osf.io/2gyuv)

Community-Driven Data Science Practices

Am Math Mon

A Barreda II, C Diaz Eaton, S Hansen, JE Hibdon, L Gordon, R Greenwald, M José Gutiérrez Paz, K Ince, C Kelling, **A Mendible**, J Mercado

Under review 2023

Complete Data for Studying the Role of Demographics in Selection of the Nobel Prizes

A Mendible, J Higdon, M Nagy, R Roca, N Rodriguez, L Xian, C Topaz

Paper in preparation

Peer-Reviewed Journal Publications

Data science and social justice in the mathematics community

Notices of the Am Math Soc

Q Jones, AR Vindas Meléndes, **A Mendible**, M Aminian, HZ Brooks, N Alexander, C Diaz Eaton, P Chodrow

2023

DOI:10.1090/noti2773

Data-driven modeling of two-dimensional detonation wave fronts	<i>Wave Motion</i>
A Mendible , W Lowrie, SL Brunton, JN Kutz	2022
DOI: 10.1016/j.wavemoti.2021.102879	
Data-driven modeling of rotating detonation waves	<i>Phys Rev Fluids</i>
A Mendible , J Koch, H Lange, SL Brunton, JN Kutz	2021
DOI: 10.1103/PhysRevFluids.6.050507	
Dimensionality reduction and reduced-order modeling for traveling wave physics	<i>Theor Comput Fluid Dyn</i>
A Mendible , SL Brunton, AY Aravkin, W Lowrie, JN Kutz	2020
DOI: 10.1007/s00162-020-00529-9	
Reduced strain mechanochemical activation onset in microstructured materials	<i>Polym Chem</i>
JJ Schwartz, R Behrou, B Cao, M Bassford, A Mendible , C Shaeffer, AJ Boydston, N Boechler	2020
DOI: 10.1039/C9PY01875A	
Randomized nonnegative matrix factorization	<i>Pattern Recognit Lett</i>
NB Erichson, A Mendible , S Wihlborn, JN Kutz	2018
DOI: 10.1016/j.patrec.2018.01.007	

Professional Articles

Getting Away From One Right Answer	<i>COMAP Consortium Newsletter</i>
A Mendible	2022

Patents

Air Flow Hour Meter	<i>US Patent 10,713,858</i>
A Mendible , S Heard, T Tran, A Hardesty	2017

Presentations

Quantitative Justice Through R: Data Provenance	<i>Upcoming 2024</i>
AMS Engaged Pedagogy Series	Virtual
Small Town Police Accountability: Case Studies and Opportunities in Data Science	<i>Jan 2024</i>
NAM-SIAM-AMS Special Session on Quantitative Justice, Joint Mathematical Meetings	San Francisco, CA
Data Science for Justice: Small Town Policing	<i>Nov 2023</i>
QSIDE Datathon4Justice, Opening Plenary	Virtual
Small Town Police Accountability: A Data Science Toolkit	<i>Jul 2023</i>
SciPy: Scientific Computing with Python	Austin, TX
Using Data Science for Social Justice	<i>Mar 2023</i>
Annual Meeting of the PNW Section of the Mathematical Association of America	Newberg, OR
QSIDE's STOPA (Small Town Policing Accountability) Research Lab	<i>Oct 2022</i>
QSIDE Datathon4Justice, Opening Plenary	Virtual
Meet Your Data Science Faculty	<i>Oct 2022</i>
Seattle University Mathematics Seminar	Seattle, WA
The Role of QSIDE's STOPA Research Lab in the Field of Criminal Justice	<i>Apr 2022</i>
QSIDE Data4Justice Conference	Virtual
Reduced-Order Modeling	<i>Mar 2022</i>
Pacific Lutheran University Mathematics Seminar	Virtual
Data-driven Modeling of Shock Waves in Rotating Detonation Engines	<i>Mar 2021</i>
SIAM Computational Science and Engineering	Virtual
Data-driven Modeling of Traveling Waves	<i>Dec 2020</i>
University of Delaware SIAM Seminar Series	Virtual
Data-driven Modeling of Traveling Waves	<i>2020</i>
Steve Brunton channel video abstract (14k views)	YouTube
Data-driven Modeling of Detonation Wave Interactions in Rotating Detonation Engines	<i>Nov 2020</i>
73rd Annual Meeting of the APS Division of Fluid Dynamics	Virtual

Dimensionality Reduction and Reduced Order Modeling for Traveling Wave Physics	Nov 2019
72nd Annual Meeting of the APS Division of Fluid Dynamics	Seattle, WA
Poster: The Space-Time Problem for Model Reduction of Traveling Waves	Jun 2019
DTRA Technical Program Review	Fairfax, VA
The Space-time Problem with Model Reduction for Traveling Waves	Mar 2019
SIAM Computational Science and Engineering	Spokane, WA

Scholarly Development

Grant Funding

Optimization of Cryoprotective Agents for Single-Mode Electromagnetic Resonant (SMER) Rewarming Technology to Enable Long-Term Organ Preservation	\$50,000
Seattle U College of Science and Engineering	2023
Multidisciplinary Research Program Award with Shen Ren (Mechanical Engineering)	
Small Town Police Accountability Lab	Workshop hosting
Banff International Research Station for Mathematical Innovation and Discovery	2022
Proposal accepted	

Workshops

Community Engaged Learning Faculty Fellowship Workshop	Sep 2023
Seattle U Center for Community Engagement, Funded Participant	Seattle, WA
Educating at the Intersection of Data Science and Social Justice Workshop	Jul 2023
Institute for Computational and Experimental Research in Mathematics, Brown University, Funded Participant	Providence, RI
Community Engaged Learning Workshop Series	May 2023
Seattle U Center for Community Engagement	Seattle, WA
Data Science and Social Justice: Networks, Policy, and Education Workshop	Jun-Jul 2022
Institute for Computational and Experimental Research in Mathematics, Brown University, Funded Participant	Providence, RI
Project NEXt Fellow	2021-2022
Mathematical Association of America	Virtual
Preparing for Careers in Teaching Statistics and Data Science Workshop	Aug 2021
Section on Statistics and Data Science Education of the American Statistical Association	Virtual
EPSRC Summer School: Modal Decompositions in Fluid Mechanics	Aug 2019
Department of Applied Mathematics and Theoretical Physics, University of Cambridge, Funded Participant	Cambridge, UK

Research Students

Alexander Churhill	AY23-24
Historical Relining and Housing Quality in Seattle	MS Data Science
Chang He, Emma Oriol	AY23-24
Historical Redlining and Cycling Accessibility	MS Data Science
Malia Cortez	AY23-24
Historical Redlining and Population Flows	MS Data Science

Service

Academic Service

Math Department Community Hour Organizer	2022-present
Organize weekly (AY 22-23) or quarterly (AY 23-24) activities and events to build departmental community	
Data Science Faculty Hiring Committee	2023
Reviewed 54 candidate applications, 14 screening interviews, hosted 4 all-day candidates, 2 hires	
MS Data Science Student Admissions Review	2023
Reviewed ~150-200 applications to MSDS program, recommended decisions	

Data Science Faculty Hiring Committee

2022

Reviewed ~9 candidate applications, 9 screening interviews, hosted 2 all-day candidates, position unfilled

Math Department Recruitment, Inclusion, Diversity, Equity and Retention Committee

2021-present

Member, led climate survey creation and distribution

QSIDE Institute Consortium SU Liaison

2021-present

Lead event coordination, advertisement at SU, and student involvement

Professional Service

Co-Director **QSIDE Small Town Police Accountability Lab**

2021- present

Co-Organizer **QSIDE Datathon4Justice**

2023

Team Lead **QSIDE Datathon4Justice**

2021, 2022, 2023

Referee **Humanities and Social Sciences Communications**

Referee **Journal of Fluid Mechanics**

Community Service

Mechanical Engineering Students Against Racism, UW Mechanical Engineering

2020-2021

Crafters Against CoVID-19

2020

Engineering Discovery Days, UW College of Engineering

2016, 2019

Bike & Build Drift West

2017

UW Society of Women Engineers, Elementary school outreach visits

2016

Honors & Awards

Community Engaged Learning Faculty Fellowship, Seattle U Center for Community Engagement

AY 23-24

Supervisor of the Year, Seattle University Student Employment Shine Award

2023

Project NExT Fellow, Mathematical Association of America

2021

Graduate Diversity Fellowship, UW Graduate Opportunities and Minority Achievement Program, Full Support

2016, 2020

Steve and Lynn Pratt Fellowship, UW Mechanical Engineering

2017, 2020

Wynne Alexander Guy Spirit of the Mathematics Department Award, SU Mathematics

2019

Wei Li and Dongmei Chen Endowed Fellowship, UW Mechanical Engineering

2017

Brian and Mary Fabien Endowed Fellowship, UW Mechanical Engineering

2016, 2017

Undergraduate Research Award, Clare Boothe Luce Foundation

2014

Additional Experience

Clear Motion (formerly Levant Power)

June - Aug 2016

Controls Engineering Intern

Woburn, MA

National Renewable Energy Laboratory

June - Aug 2015

Science Undergraduate Laboratory Internship

Boulder, CO

Network for Earthquake Engineering Simulation

June - Aug 2014

OH Hinsdale Wave Research Laboratory REU

Corvallis, OR