

CURRICULUM VITAE

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EDUCATION

June 2021 Ph.D. in Applied Mathematics	Department of Mathematics, Wayne State University Mathematics
August 2018 M.A. in Mathematical Statistics	Department of Mathematics, Wayne State University Mathematics
July 2016 Le Master de Mathématiques (M1) International Master Program in Mathematics	Institute of Mathematics, Vietnam Academy of Science and Technology, Hanoi, Vietnam Mathematics
June 2015 B.S. in Mathematics and Education (Valedictorian)	Department of Mathematics and Statistics Quy Nhon University, Vietnam Mathematics and Education

ACADEMIC POSITIONS HELD

August 2023 – Present Department of Mathematics and Statistics San Diego State University, San Diego, USA	Tenure Track Assistant Professor Optimization, Data Science, Optimal Control
August 2021 – July 2023 Department of Mathematics University of Michigan, Ann Arbor, USA	Non-Tenure Track Assistant Professor Optimization, Data Science, Optimal Control
August 2016 – June 2021 Department of Mathematics Wayne State University, USA	Graduate Research and Teaching Assistant Mathematics
August 2015 – July 2016 Institute of Mathematics Vietnam Academy of Science and Technology, Hanoi, Vietnam	Researcher Mathematics

REFEREED JOURNAL ARTICLES

Authorship in all publications is listed alphabetically. Underlined authors indicate student collaborators supervised or co-supervised by me.

1. 2026 – T. H. Cao, B. S. Mordukhovich, **D. Nguyen**, T. Nguyen, N. Thieu, Optimal Control of Nonconvex Sweeping Processes with Variable Time via Finite-Difference Approximations, *Nonlinear Analysis: Hybrid Systems*, Vol. 61 (2026), Article 101755. Ranking: Q1; Impact Factor: ~3.0.
Contribution: I co-developed the discrete approximation framework for variable-time sweeping processes, established well-posedness and strong convergence results, derived necessary optimality conditions using variational analysis and generalized differentiation techniques.
2. 2026 – L. Q. Anh, **D. Nguyen**, L. V. Day, L. T. V. Khanh, and T. T. T. Mai, Semicontinuity Conditions in Parametric Set Optimization Problems with Applications, submitted to *Vietnam Journal of Mathematics*. Ranking: Q2.
Contribution: I contributed to applications in interval optimal control and weed management models.
3. 2025 – Edward Lester, **D. Nguyen**, Stochastic Gradient Calibration of Neural Network–Driven Interacting Particle Systems, submitted to *Journal of Optimization Theory and Applications*. Ranking: Q1
Contribution: I supervised the project, co-designed the stochastic gradient framework, and guided the analysis; Lester implemented experiments.
4. 2025 – Harbir Antil, Rafael Arndt, Boris Mordukhovich, **D. Nguyen**, Carlos N. Rautenberg, Optimal Control of a Quasi-Variational Sweeping Process, *Mathematical Control and Related Fields*, Vol. 16, pp. 132–156. DOI: 10.3934/mcrf.2025010. Ranking: Q1; Impact Factor: ~1.2
Contribution: I co-authored the theoretical development, focusing on well-posedness proofs and the necessary optimality conditions.
5. 2025 – B. S. Mordukhovich, **D. Nguyen**, T. Nguyen, N. Ortiz-Robinson and V. Rios, Well-Posedness and Stability of Discrete Approximations for Controlled Sweeping Processes with Time Delay, *Journal of Optimization Theory and Applications*, 206 (70). Ranking: Q1 (JOTA); Impact Factor: ~1.8
Contribution: I developed the discrete approximation framework, coordinated stability proofs, and validated convergence results.
6. 2024 – G. Colombo, B. S. Mordukhovich, **D. Nguyen**, T. Nguyen, N. Ortiz-Robinson, Optimal Control of Perturbed Sweeping Process with Applications to General Robotic Models, *Journal of Optimization Theory and Applications*, accepted, [arXiv:2405.08986]. Ranking: Q1; Impact Factor: ~1.8
Contribution: I derived the model and the formulations, co-authored optimality conditions, and connected the results to robotic system modeling.
7. 2024 – B. S. Mordukhovich, **D. Nguyen**, T. Nguyen, Optimal Control of Sweeping Processes in Unmanned Surface Vehicles and Nanoparticle Modeling, *Optimization* (2024), 1–33. Ranking: Q1 in Optimization/Applied Math; Impact Factor: ~1.8
Contribution: I led the application to nanoparticle transport models, co-authored the derivation of necessary conditions, and finalized the analysis for marine vehicles.
8. 2024 – G. Colombo, B. S. Mordukhovich, **D. Nguyen**, T. Nguyen, Discrete Approximations and Optimality Conditions for Controlled Free-Time Sweeping Processes, *Applied Mathematics & Optimization* 89 (2024), Article 40. Ranking: Q1 in Applied Mathematics; Impact Factor: ~1.9
Contribution: I co-developed the proof of discrete approximation results, including optimality conditions, and validated robustness for free-time formulations.
9. 2023 – Lewei Zhao, Sophie Wuyckens, Juntao You, Gang Liu, Xiliang Lu, Boris Mordukhovich, **D. Nguyen**, Xuanfeng Ding, Spot Drilling Time Optimization for a Cyclotron-Based Proton Therapy System, 61st PTCOG Conference, Madrid, Spain.

10. 2021 – T. H. Cao, B. S. Mordukhovich, **D. Nguyen**, T. Nguyen, Applications of Controlled Sweeping Processes to Nonlinear Crowd Motion Models with Obstacles, *IEEE Control Systems Letters*, 2021 June; 6:740-745. Ranking: Q1; Acceptance Rate: 20%; Impact Factor: ~2.42.
Contribution: I developed parts of the mathematical analysis and helped link results to crowd modeling scenarios.
11. 2021 – T. H. Cao, N. T. Khalil, B. S. Mordukhovich, **D. Nguyen**, F. L. Pereira, Crowd Model Paradigm Modeled by Bilevel Optimal Control, *IEEE Control Systems Letters*, 2021 May; 6:390-395. Ranking: Q1; Impact Factor: ~2.42
Contribution: I worked on bilevel optimal control analysis and proof strategies for crowd flow systems.
12. 2021 – T. H. Cao, N. T. Khalil, B. S. Mordukhovich, T. Nguyen, **D. Nguyen**, F. L. Pereira, Optimization of Controlled Free-Time Sweeping Processes with Applications to Marine Surface Vehicle Modeling, *IEEE Control Systems Letters*, June 2021, 6:782-787. Ranking: Q1; Impact Factor: ~2.42
Contribution: I co-developed the free-time formulation and co-authored proofs applying sweeping dynamics to marine vehicles.
13. 2021 – B. S. Mordukhovich, **D. Nguyen**, Discrete Approximations and Optimal Control of Nonsmooth Perturbed Sweeping Processes, *Journal of Convex Analysis* 28 (2021), No. 2. [arXiv:2004.13884] Ranking: Q1 in Mathematics; Acceptance Rate: ~45%; Impact Factor: ~1.3
Contribution: I led the approximation analysis and collaborated on deriving optimality conditions for nonsmooth dynamics.
14. 2021 – T. H. Cao, G. Colombo, B. S. Mordukhovich, **D. Nguyen**, Optimization of Fully Controlled Sweeping Processes, *Journal of Differential Equations*, September 2021, 295: 138-186; Ranking: Q1 in PDE/Differential Equations; Acceptance Rate: 22%; Impact Factor: ~2.3
Contribution: I contributed to theoretical development, focusing on fully controlled sweeping models and their optimality conditions.
15. 2020 – T. H. Cao, G. Colombo, B. S. Mordukhovich, **D. Nguyen**, Optimization and Discrete Approximation of Sweeping Processes with Controlled Moving Sets and Perturbations, *Journal of Differential Equations* 274 (2020), 461-509. Ranking: Q1 in Applied Mathematics/Differential Equations; Acceptance Rate: 22%; Impact Factor: ~2.3
Contribution: I co-authored the approximation scheme and helped establish convergence and stability results.
16. 2020 – G. Colombo, B. S. Mordukhovich, **D. Nguyen**, Optimization of a Perturbed Sweeping Process by Discontinuous Controls, *SIAM Journal on Control and Optimization* 58 (2020), 2678-2709. Ranking: Q1 in Control & Optimization; Acceptance Rate: 23%; Impact Factor: ~2.4
Contribution: I collaborated on derivation of discontinuous control strategies and necessary optimality analysis.
17. 2019 – G. Colombo, B. S. Mordukhovich, **D. Nguyen**, Optimal Control of Sweeping Processes in Robotics and Traffic Flow Models, *Journal of Optimization Theory and Applications* 182 (2019), 439-472. Ranking: Q1 in Control & Optimization; Acceptance Rate: 25%; Impact Factor: ~1.8
Contribution: I led the traffic flow modeling aspects and co-authored the optimal control framework, and all calculations in applications.

PUBLICATIONS IN PROCESS

Books:

1. Foundations of Machine Learning, **D. Nguyen**, In preparation for submission to Cognella Academic Publishing.

Textbooks:

1. Applied Linear Regression, **D. Nguyen**, Textbook manuscript in preparation to support a proposed new course in the SDSU curriculum.

Journal Articles:

1. Yen Dang, **D. Nguyen**, Optimization for controlled sweeping processes and applications, in preparation.
2. Hamish Arora, **D. Nguyen**, Nhan Le, Learning-Enhanced Model Predictive Control for a Differential-Drive Robot via iLQR Warm Starts and Residual Neural Correction, in preparation.
3. Trinh Ho, Thao Le, **D. Nguyen**, Generalization of Learned UAVs Dynamics Models Under Unseen Flight Conditions, in preparation.
4. Huynh Khoi Minh Uyen, **D. Nguyen**, ELOSPAT Alternative: Non Convex $L_{\{1,1/2\}}$ Norm Optimization for Proton Arc Therapy.
5. Thang Nguyen, **D. Nguyen**, Well-posedness of a time-delayed sweeping process with a controlled polyhedral set.
6. Tan H. Cao, Boris S. Mordukhovich, **D. Nguyen**, Nathalie Khalil, Optimization and Finite Difference Approximations of a Perturbed Sweeping Process with Variable Time, in preparation.
7. Tan Cao, **D. Nguyen**, Emilio Vilches, Optimal Control of ODEs System with Hysteresis via Discrete Approximations, in preparation.
8. **D. Nguyen**, Optimization for Sweeping Processes and Applications in Reinforcement Learning, in preparation.

SCHOLARLY AWARDS

- Assigned Time for Research, Scholarship, and Creative Activities (AY 25-26) award for the project: "Optimization Research, Data Science Curriculum Development, and External Grant Applications for Student Support."
- NSF conference grant \$25,000, 2023-2025.
- Research of this author was partly supported by the USA National Science Foundation under grant DMS--1808978, DMS--1743826, DMS--1512846, the USA Air Force Office of Scientific Research grant 15RT0462, and the EDES grant number REDI170200.
- AMS Simons Travel Grant, 07/2022--07/2024 (\$5,000).
- Early-career AMS-NSF-Simons-ICM Travel Grant (\$3,500).
- Travel Award from the University of Michigan, 2021--2022.
- Thomas C. Rumble University Graduate Fellowship, Wayne State University, 2020--2021.
- SIAM Student Travel Award (\$2,500), 2020--2021.
- Paul Catlin, Ph.D. Endowed Memorial Scholarship Award in Recognition of Outstanding Achievement in the Ph.D. Program, Department of Mathematics, Wayne State University, 2019--2020
- Graduate Student Travel Award Joint Mathematics Meeting, American Mathematical Society, 2019--2020.
- SIAM Student Travel Award, to attend The Second Joint SIAM/CAIMS Annual Meeting (AN20), Toronto, Ontario, Canada, 2019--2020.
- Nominated (by Department of Mathematics) for the 2020 Garrett T. Heberlein Endowed Award for Excellence in Teaching for Graduate Students, Wayne State University, 2019--2020.
- Travel Award for the East Coast Optimization Meeting 2020.
- Travel Award by National Science Foundation, Grant No. DMS-1512846, 2019--2020.

- Travel Award by REDES grant number REDI170200, for School and Workshop Control of State-Constrained Dynamical Systems, Chile, 2019--2020.
- Graduate Student Professional Travel Awards, Wayne State University, 2019--2020.
- The M.F. Janowitz Scholarship in Recognition of Outstanding Achievement in the Ph.D. Program, Department of Mathematics, Wayne State University, 2018--2019.
- The Paul Weiss Award in Recognition for Outstanding Achievement in the Masters Program, Wayne State University, 2018--2019.
- Travel Award by the Weierstrass Institute for Applied Analysis and Stochastics (WIAS) Berlin for ICCOPT 2019, Germany.
- SIAM Student Travel Award by the U.S. National Science Foundation (NSF) to attend the 9th International Congress on Industrial and Applied Mathematics (ICIAM 2019), July 15-19, 2019 in Valencia, Spain (\$2,500).
- SIAM Student Travel Award by the National Science Foundation (NSF) to attend the 2019 SIAM Conference on Control and Its Applications in China (\$2,500).
- Graduate Research Fellowship, Wayne State University, 2018--2019.
- Travel Award by MCAIM and SIAM for the 2019 SIAM Great Lakes Section Meeting.
- Graduate Student Professional Travel Awards, Wayne State University, 2018--2019.
- Maurice J. Zelonka Endowed Scholarship in Recognition of Outstanding Achievement in the Ph.D. Program, Department of Mathematics, Wayne State University, 2017--2018.
- Paul Catlin Endowed Mathematics Scholarship in Recognition of Outstanding Achievement in the Ph.D. Program, Department of Mathematics, Wayne State University, 2017--2018.
- Second Place, Graduate and Postdoctoral Research Symposium, Tuesday, March 6, 2018, Wayne State University.
- Travel Awards, National Science Foundation (NSF), DMS Award 1743826, 2017--2018.
- Travel Awards, Air Force Office of Scientific Research, Grant No. 15RT0462, 2017--2018.
- Graduate Student Professional Travel Awards, Wayne State University, 2017--2018.
- Graduate Student Professional Travel Awards, Wayne State University, 2016--2017.
- Travel support, The Seventh Ohio River Analysis Meeting, University of Cincinnati, Cincinnati, Ohio, March 25-26, 2017.
- Graduate Teaching Assistant, Wayne State University, 2016--2017.
- Award for excellent mathematical students, National Program for the Development of Mathematics in 2014-2015.
- Award for the most excellent student graduating in Mathematics Teaching Education and Award of ranking the 1st of Department of Mathematics, Quy Nhon University, Vietnam, June 2015.
- Government Scholarships for outstanding undergraduate student, 2011-2012, 2012-2013, 2013-2014,
- Certificate completion of Student Scientific Research Project, University level Academic year 2013-2014.
- Certificate for the 2013 National Mathematical Olympiad in Algebra, for undergraduate students held in Duy Tan University, Vietnam, 2014-2015.
- Top 5 excellent students, at National Summer School of Mathematics for Young Students, held by Institute of Mathematics-Vietnam Academy of Science and Technology (VAST) in 2013, 2014.

FUNDED RESEARCH GRANTS

1. **\$25,000 – NSF Conference Grant: Conference 2023 Midwest Optimization Meeting**, Co-PI, **Awarded**, NSF (Highly Competitive; acceptance rate not publicly stated), Start Date: 03/10/2023 – End Date: 08/16/2023.

GRANTS SUBMITTED

1. \$405,531 – NSF Applied Mathematics Collaborative Proposal Submission with Professor Trang Nguyen at South Dakota State University, Optimal Control of Second-Order Sweeping Processes and Applications, PI, NSF, Received: 11/17/2025.
2. \$406,507 – Optimal Control of Second-Order Sweeping Processes and Applications, PI, Declined, NSF, Received: 11/15/2024 – Status Date: 05/12/2025.
3. \$458,326 – CAREER: Optimization of Nonsmooth Dynamical Systems and Its Applications, PI, Declined, NSF, Received: 07/24/2024 – Status Date: 01/22/2025.
4. \$249,999 – LEAPS-MPS: Optimization Method for the Proton Therapy System, PI, Declined, NSF, Received: 01/25/2024 – Status Date: 07/19/2024.
5. \$398,441 – Optimal Control of Second-Order Sweeping Processes and Applications, PI, Declined, NSF, Received: 11/15/2023 – Status Date: 05/15/2024.
6. \$605,735 – Optimization for Controlled Random and Stochastic Sweeping Processes, PI, Declined, NSF, Received: 09/19/2023 – Status Date: 03/17/2024.
7. \$213,349 – Optimal Control for Random and Stochastic Sweeping Processes, PI, Declined, NSF, Received: 12/12/2022 – Status Date: 05/14/2023.
8. \$268,763 – Discrete Approximation of Second-Order Sweeping Processes with Controlled Perturbations, PI, Declined, NSF, Received: 11/10/2022 – Status Date: 05/11/2023.
9. \$150,000 – Postdoctoral Research Fellowship, PI, Declined, NSF, Received: 10/19/2022 – Status Date: 03/06/2023.
10. \$295,463 – Optimal Control for Random and Stochastic Sweeping Processes (Agency Tracking Number 2205693), PI, Declined, NSF, Submitted: 11/12/2021 – Status Date: 05/15/2022.

PARTICIPATION IN PROFESSIONAL ASSOCIATIONS

1. Member, Society for Industrial and Applied Mathematics (SIAM).
2. Member, American Mathematical Society (AMS).
3. Member, Mathematical Optimization Society (MOS).
4. Member, IEEE Control Systems Society (CSS).

TALKS

1. Invited Talk - University of California San Diego, January 14, 2026.
2. 2025 Midwest Optimization Meeting - University of North Dakota (Oct 31 - Nov 3, 2025)
3. Seminar - South Dakota State University (Oct 25- 30, 2025)
4. SIAM TX-LA 2025 Conference - UT Austin (Sep 26 - 28, 2025)
5. Seminar - UT Arlington (Sep 11 - 25, 2025)
6. Seminar on Optimization and Data Science at the Department of Mathematics at Ohio State University
7. University of Science, VNU-HCM, Time: 09:00 – 11:00, Thursday, December 12, 2024.
8. Can Tho University, Time: 10:00 – 11:30, Monday, December 16, 2024.

9. Quy Nhon University, Time: 14:00 – 16:00, Saturday, December 21, 2024.
10. The 3rd Vietnam – Korea Joint Workshop on Selected Topics in Mathematics, Time: January 6–9, 2025, Venue: Hanoi.
11. International Joint Meetings, co-organized by the Unione Matematica Italiana (UMI) and the American Mathematical Society (AMS), after 22 years, with more than 1500 participants, Palermo, Italy.
12. Visit my collaborators at University of Paris-Saclay.
13. National University of Singapore (Jun 13-17, 2024)
14. University of Texas, Arlington & Austin (Nov 25-28, 2023).
15. Midwest Optimization Meeting 2023 - University of Michigan, Ann Arbor (Oct 21-22, 2023).
16. Oct 11, 2023 – Invited Talk at the University of California San Diego, Optimization and Data Science Seminar (in person).
17. Sep 15, 2023 – Invited Talk at the Computational Science Research Center, San Diego State University.
18. Jan 16-20, 2023 – The Latin American Workshop on Optimization and Control, Chile (Plenary Speaker).
19. Jan 24-26, 2023 – Invited Talk, Department of Mathematics, Southern Methodist University, Dallas, TX.
20. Feb 08-11, 2023 – Invited Talk, Department of Mathematics and Statistics, San Diego State University, San Diego, CA.
21. Feb 21-24, 2023 – Invited Talk, Department of Mathematics, Western Washington University, Bellingham, WA.
22. May 31–Jun 3, 2023 – SIAM Conference on Optimization (OP23), Seattle, Washington, U.S. (Invited Talk).
23. Jan 16-20, 2023 – The Latin American Workshop on Optimization and Control, Chile (Plenary Speaker).
24. Oct 28, 2022 – Midwest Optimization Meeting, Canada (Invited Talk).
25. Dec 13-17, 2021 – The 60th IEEE Conference on Decision and Control, Austin, Texas, USA.
26. Oct 29-30, 2021 – The 23rd Midwest Optimization Meeting, Grand Valley State University, Grand Rapids MI.
27. Aug 25-29, 2021 – New Postdoc Mini-Symposium, University of Michigan, Invited Talk.
28. Jul 2021 – Department of Mathematics, National University of Singapore, Singapore (Invited talk).
29. Jun 2021 – The 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Atlanta (Invited talk).
30. Jul 20–23, 2021 – SIAM Conference on Optimization (OP21), Spokane, Washington, U.S.
31. Apr 4, 2021 – SAMPLE seminar series (Virtual), Applied Mathematics Department, University of California, Merced (Invited talk).
32. Apr 1–2, 2021 – East Coast Optimization Meeting (Virtual), Center for Mathematics and Artificial Intelligence, George Mason University, Fairfax, Virginia (USA).
33. Jan 6–9, 2021 – AMS Special Sessions at the JMM (Virtual): Variational Analysis and Optimization, Washington Convention Center (Invited talk).
34. May–Aug, 2020 – Online Conferences: Machine Learning and Control Theory, CMAI Colloquium, Virtual Conference on Reinforcement Learning for Real Life, 4th International conference on Modelling, Computation and Optimization in Information Systems and Management Sciences (MCO 2021).
35. Jul 6–10, 2020 – The Second Joint SIAM/CAIMS Annual Meeting (AN20), Toronto, Ontario, Canada.
36. Apr 2–3, 2020 – East Coast Optimization Meeting 2020, Department of Mathematical Sciences, George Mason University, Fairfax, Virginia (Invited talk).

37. Mar 3, 2020 – The 10th Annual Graduate and Postdoctoral Research Symposium: Poster Judging, Wayne State University, Michigan.
38. Jan 14–19, 2020 – Joint Mathematics Meetings, Colorado Convention Center, Denver, Colorado.
39. Oct 11–12, 2019 – The 21st Midwest Optimization Meeting, Northern Illinois University, DeKalb, Illinois (Invited talk).
40. Sep 24–27, 2019 – Control of State-Constrained Dynamical Systems: School and Workshop, Valparaíso, Chile (Invited talk).
41. Jul 15–19, 2019 – The 9th International Congress on Industrial and Applied Mathematics (ICIAM 2019), Universitat de València, Valencia, Spain (Invited talk).
42. Aug 3–8, 2019 – ICCOPT 2019, the Sixth International Conference on Continuous Optimization, Technical University of Berlin, Berlin, Germany.
43. Jul 2019 – Dipartimento di Matematica, Università degli Studi di Padova, Italy (Invited talk).
44. Jun 22–25, 2019 – Department of Mathematics, Sun Yat-Sen University, Guangzhou, China (Invited talk).
45. Jun 19–21, 2019 – SIAM Conference on Control and Its Applications (CT19), Chengdu, China.
46. Jun 10–13, 2019 – Vietnam-USA Joint Mathematical Meeting, Quy Nhon, Vietnam (Invited talk).
47. Apr 27, 2019 – SIAM Great Lakes Section Annual Meeting (GLSIAM 2019), University of Michigan.
48. Apr 12, 2019 – Conference on Stochastic Processes and Applications, Wayne State University (Invited talk).
49. Mar 5, 2019 – Graduate and Postdoctoral Research Symposium, Wayne State University.
50. Oct 18, 2018 – The Chuan-Pu Lee, Ph.D. Endowed Graduate Student Research Presentation Day, Wayne State University.
51. Oct 12–13, 2018 – The 2018 Midwest Optimization Meeting, Miami University, Oxford, Ohio (Invited talk).
52. Apr 21, 2018 – 2018 SIAM Great Lakes Section Annual Meeting (GLSIAM 2018), Wayne State University (Invited talk).
53. Apr 14–15, 2018 – AMS Spring Western Sectional Meeting, Portland State University, Portland, Oregon (Invited talk).
54. Apr 24, 2018 – PDE Seminar, Department of Mathematics, Wayne State University (Invited talk).
55. Mar 6, 2018 – Graduate and Postdoctoral Research Symposium, Wayne State University (Invited talk).
56. Dec 19–21, 2017 – International Workshop on Variational Analysis and Optimization Theory, Hanoi, Vietnam (Invited talk).
57. Oct 21, 2017 – The 19th Midwest Optimization Meeting, Oakland University, Rochester, Michigan (Invited talk).

SHORT-TERM VISITS

1. Visit Stanford University April 7-10, 2025, visiting and collaborating with my colleague, Lewei Zhao.
2. 06/08 - 06/13, 2025: Trang Nguyen & Boris Mordukhovich, Wayne State University.
3. 06/13 - 06/17, 2025: Tuyen Tran, Loyola University.
4. 06/17 - 06/19, 2025: Zhong-Ping Jiang, New York University.
5. 06/19 - 06/22, 2025: Harbir Antil & Carlos N. Rautenberg, George Mason University.
6. Dec 2022 – Department of Mathematics, Michigan State University. Host: Professor Vera Zeidan.
7. Jun 2021 – Department of Mathematics, National University of Singapore. Host: Professor Toh Kim Chuan.

8. Jul 2019 – Dipartimento di Matematica, Università degli Studi di Padova, Italy. Host: Professor Giovanni Colombo. Financial support: Professor Boris Mordukhovich.
9. Jun 2019 – Sun Yat-Sen University, Guangzhou, China. Host: Professor Qinghui Zhang.
10. Aug 2019 – Weierstrass Institute for Applied Analysis and Stochastics (WIAS), Berlin, Germany (Summer School “Optimization and Machine Learning”).
11. Jul 2018 – Jackson State University, Jackson, MS, NSF DMS Award 1743826 (2018 NSF-CBMS: Computational Methods in Optimal Control).
12. Oct 2015 – Autumn School “Theoretical Computer Science”, Institute of Mathematics, Vietnam Academy of Science and Technology (VAST).
13. Jul 2015 – Summer School “Mathematical Statistics Tools: Theory and Practice”, Vietnam Institute for Advanced Study in Mathematics.
14. Jul 2013 & Jul 2014 – National Summer School of Mathematics for Young Students, Institute of Mathematics, VAST, Hanoi, Vietnam.

CERTIFICATES

1. Dec 2018 – Game Theory by Stanford University & The University of British Columbia.
2. Jan 2019 – Machine Learning by Stanford University.
3. Mar 2019 – Applied Data Science with Python Specialization, University of Michigan.
4. Mar 2019 – Introduction to Data Science in Python, University of Michigan.
5. Jun 2020 – Reinforcement Learning, University of Alberta.

TEACHING EFFECTIVENESS

2023-Present

Curriculum Development, Teaching Innovation, and Instructional Materials (SDSU):

- **Textbooks and Teaching Aids (in progress):**
 - Foundations of Machine Learning: Developing a textbook manuscript to support a future graduate-level course at San Diego State University.
 - Applied Linear Regression: Developing instructional materials and a draft course textbook to support a proposed new course in the Data Science Program.
- **Course and Curriculum Development:**
 - Developed and proposed a graduate-level course, Applied Linear Regression, and submitted full course materials to the Department Chair for review (February 23, 2024) in preparation for a future Curriculog submission.
 - Developing a textbook manuscript, Foundations of Machine Learning, and consulted with the Department Chair regarding its potential use as the basis for a future graduate-level course (March 10, 2025).
 - Developed and taught MATH 693B: Advanced Computational PDEs; taught MATH 630: Applied Real Analysis and MATH 330: Advanced Calculus I at SDSU.
- **Teaching Innovations:**
 - Expanded the use of technology in instruction, including Python for computational exploration and LaTeX for professional mathematical writing.
 - Implemented evidence-based teaching strategies, including a flipped classroom model, structured peer feedback on homework assignments, and mid-semester self-designed student feedback surveys, to improve engagement, formative assessment, and instructional responsiveness.
 - Implemented group work, active learning strategies, and formative assessments to promote student engagement.
 - Reorganized course modules to improve coherence, pacing, and alignment with learning outcomes.
 - Integrated real-world applications and visual aids to enhance conceptual understanding.
- **Research-Integrated Teaching and Mentoring:**
 - Supervised undergraduate and graduate student research projects embedded in coursework, several of which resulted in thesis completions, manuscript submissions, and publications.
- **Peer Evaluation of Teaching:**
 - Peer observations (2023, 2025) commended interactive pedagogy, inclusive classroom environment, effective use of active learning, and responsiveness to student feedback.

2019-2022

Teaching Awards and Honors:

- Nominated by the Department of Mathematics for the Garrett T. Heberlein Endowed Award for Excellence in Teaching for Graduate Students (Wayne State University, 2020).
- Thomas C. Rumble University Graduate Fellowship, Wayne State University.
- Recipient of multiple travel and professional development awards (AMS, SIAM, NSF), supporting teaching and scholarly development.

2016-2022

Teaching Training and Professional Development:

- Professional Development Program, Department of Mathematics, University of Michigan (Fall 2021).

- Teaching Mathematics in College, Wayne State University (Fall 2016): semester-long pedagogical training covering instructional design, assessment, grading, classroom management, and educational technology.
- Experience teaching online and hybrid courses using Zoom, Big Blue Button, Kahoot, and Canvas, particularly for Statistics courses.
- Participant, Innovative Educators' Virtual Summit (Hawkes Learning).

Graduate and Undergraduate Student Mentoring (2023-Present)

Graduate Student Supervision and Mentoring (SDSU):

- **Edward Lester** (M.S. in Applied Mathematics, SDSU, 2024-2025).
Primary thesis advisor. Supervised a full-year Master's thesis on applied optimization, with intensive mentoring through twice-weekly meetings. Mr. Lester successfully defended his thesis in August 2025 (*Stochastic Gradient Descent for Traffic and Pedestrian Models via Neural Networks and Parameter Identification*). This work resulted in a co-authored manuscript submitted for publication.
- **Yen Dang** (M.S. student, SDSU, 2024–present).
Primary research supervisor for a Master's thesis on *Optimization for Controlled Sweeping Processes and Applications*. Provided sustained mentoring through regular meetings (at least twice weekly), including background training, proof development, and computational experiments. A draft manuscript is currently in preparation; thesis completion expected in 2026.
- **Hien Nhan** (M.S. student, Big Data Analytics, SDSU, 2025-present).
Early-stage research mentor, providing foundational guidance in data science research and helping define potential research directions; expected to register me as her formal advisor.
- **Anthony Cortez** (M.S. student, SDSU, 2023-2024).
Informal research mentor (not primary advisor). Mentored Mr. Cortez on optimization and machine learning methods (iLQR and neural networks) to support Ph.D. applications; contributed to his successful preparation for doctoral study.

Ph.D. Level Mentoring (SDSU Joint Program and External):

- **Ngoc Pham** (Ph.D. student, SDSU-UCI Joint Program, 2025).
Research mentor on a project involving DEQ-MPC (Deep Equilibrium Model Predictive Control). Supervised research activities from Spring-Fall 2025; completed a manuscript based on this work.
- **Chinmaya Kausik** and **Yuzhou Mao** (Ph.D. students, University of Michigan).
Co-mentor providing weekly research guidance on projects aligned with optimal control and variational analysis.
- **Nghi Tran** (Ph.D. student, Wayne State University).
External research mentor on sweeping process optimization; provided regular advisory meetings and feedback.

Undergraduate Research Mentoring (SDSU):

Mentored **14 undergraduate students** at SDSU (typically 2-3 per semester) through sustained, hands-on research projects spanning one or more semesters.

Students include: **Sristi Fulsunge, Rhea Shenoy, Monica Lester, Ethan Gerez, Lillian Snyder, Mariel Estrada, Moises Varela, Palash Vijaykumar Suryawanshi, Jennie Nguyen, Robert Nguyen, Trinh Ho, Lilian, Rhea**, among others.

- Provided intensive early-stage training (3-5 hours/week during initial 4-8 weeks) in mathematical theory, programming, and literature review, followed by regular research meetings (typically twice weekly).
- Undergraduate projects contributed to broader research efforts in optimization, control, and machine learning.

Notably, **Jennie Nguyen** (mentored 2023-2024) was admitted to a Ph.D. program with scholarship at the University of Texas at Arlington, following research training and a strong recommendation letter.

Additional Mentoring and Service:

- Served on **Master's Thesis Defense Committees**: Luan Nguyen (2026), Luan Bui (2026), Cameron Deschenes (2025), Samuel Persaud (2025), Aliha Shareef (2024).

- Mentored **REU student Zhongqi Ma** (University of Michigan) on neural networks and domain knowledge integration; manuscript in preparation.
- Supervised **Log(M) students at the University of Michigan**: Tianyi Cheng, Matthew Nomura, Chang Wang (Fall 2021); Cruise Song, Elham Islam, Pranjal Sharma, Yurong Chen (Fall 2022).
- Provided remote research mentoring to **33 international (Vietnamese) students**, supporting early research training and graduate school preparation.

COURSES TAUGHT

Courses taught with full responsibility

- Fall 2025: MATH 330 – Advanced Calculus I (Upper, In-Person).
- Winter 2025: MATH 693B – Advanced Computational PDEs (Graduate, In-Person).
- Fall 2024: MATH 630 – Applied Real Analysis (Graduate, In-Person).
- Winter 2024: MATH 693B – Advanced Computational PDEs (Graduate, In-Person).
- Fall 2023: MATH 330 – Advanced Calculus I (Upper, In-Person).
- Winter 2023: MATH 371 – Numerical Methods for Engineering (Upper, In-Person, 2 sections).
- Fall 2022: MATH 471 – Numerical Methods (Graduate, In-Person, 2 sections).
- Summer 2022: MATH 471 – Numerical Methods (Graduate, In-Person).
- Winter 2022: MATH 116 – Calculus II (Lower, In-Person, 2 sections).
- Fall 2021: MATH 115 – Calculus I (Lower, In-Person, 2 sections).
- Summer 2020: MAT 1020 – Statistics (Lower, In-Person).
- Winter 2020: MAT 1020 – Statistics (Lower, In-Person).
- Fall 2019: MAT 1800 – Elementary Functions (Lower, In-Person).
- Winter 2019: MAT 2010 – Calculus I (Lower, In-Person).
- Summer 2018: MAT 1800 – Elementary Functions (Lower, In-Person).
- Winter 2018: MAT 1050 – Algebra with Trigonometry (Lower, In-Person).
- Fall 2017: MAT 1050 – Algebra with Trigonometry (Lower, In-Person).

Research supervision courses

MATH 797 (Fall 2024, Spring 2025, Fall 2025, Fall 2026); **MATH 798** (Fall 2025, Fall 2026); **MATH 799** (Summer 2025, Spring 2026, Summer 2026). These courses involved graduate research supervision, regular meetings, and guidance on thesis and research progress.

SERVICE

Service for the Department

- 2023-Present Data Science Program Development, Department of Mathematics and Statistics, San Diego State University
Development of instructional materials in mathematical data science; interdisciplinary collaboration related to program development and external funding initiatives.
- 2024-Present Graduate Committee Service, Department of Mathematics and Statistics, San Diego State University
Member, M.S. Thesis Defense Committees: Cameron Deschenes (2025), Samuel Persaud (2025), Aliha Shareef (2024).
- 2024 SDSU Summer Mathematics REU Program (NSF REU Proposal), San Diego State University
Prospective research mentor on the NSF Research Experiences for Undergraduates (REU) proposal led by Dr. Christopher O'Neill (PI) and Dr. Vadim Ponomarenko (co-PI). Contributed a Collaborators and Other Affiliations (COA) document and a sample undergraduate research project for inclusion in the proposal.
- 2023-2024 Departmental and CSRC Seminar Support, San Diego State University
Initiated invitations and coordination for external seminar speakers for the Department Seminar and CSRC Friday Seminar, including logistical and funding coordination.
- 2023-2024 Faculty Recruitment Support, Department of Mathematics and Statistics, SDSU
Participated in scheduled candidate meetings and provided written feedback to the search committee.
- 2016-2021 Activities Committee, Department of Mathematics, Wayne State University
- 2016-2021 Graduate Employees' Organizing Committee, Wayne State University
- 2016-2019 Math Computer Library, Math Resource Center, Wayne State University

Service for the University

- 2023-2024 Judge, Computational Science Research Center (CSRC) Annual ACSESS Event, San Diego State University (March 2023 and March 2024)
- 2024 Panelist, New Faculty Orientation, San Diego State University (August 2024)
- 2018-2020 Judge, Doctoral Section, Graduate and Postdoctoral Research Symposium, Wayne State University
- Planned/ Upcoming: Judge, CSRC Student Research Symposium, San Diego State University

Service for the Profession

- 2023-Present Editor, Special Issue of *Journal of Optimization Theory and Applications* (Springer) *New Trends in Optimization, Control, and Their Applications* - Special Issue Dedicated to Boris Sh. Mordukhovich.
- 2020-Present Editorial Board Member, *Artificial Intelligence Advances*
- 2016-Present Reviewer for leading journals, including:
SIAM Journal on Control and Optimization; *Journal of Differential Equations*; *Journal of Optimization Theory and Applications*; *Set-Valued and Variational Analysis*; *Applicable Analysis*; *Optimization Letters*.
- 2023 Co-organizer and Session Chair, Midwest Optimization Meeting (supported by NSF Conference Grant)
- 2018-2020 Session Chair, SIAM and Joint Mathematics Meetings (JMM)
- 2021-Present Organizer, Variational Analysis and Optimization Seminar, University of Michigan, Ann Arbor

Service for the Community and Outreach

- 2023-2025 Graduate Recruitment and International Outreach, San Diego State University
Promoted SDSU graduate programs through invited research talks and advising of prospective applicants in the U.S. and internationally (Vietnam).
- 2025 Participant, 3rd Vietnam-Korea Joint Workshop on Selected Topics in Mathematics, Hanoi
- 2021-2023 Michigan Math Circle, University of Michigan
- 2021-2023 Math Corps, University of Michigan
- 2021-2023 Michigan Math and Science Scholars (MMSS), University of Michigan
- 2021-2023 Math Teacher Circles, University of Michigan
- 2021-2023 Math Club, University of Michigan
- 2021-2023 Association for Women in Mathematics, University of Michigan

Academic Outreach and Research Leadership

- 2026-Present Founder and Director, AI & Mathematical Research Program
Founded an outreach program promoting research in mathematics, optimization, artificial intelligence, and data science. Mentored K-12, undergraduate, master's, and Ph.D. students through interdisciplinary research projects. Organized research seminars, workshops, and computational training in Python, machine learning, optimization, and scientific computing. Guided students toward graduate school, research careers, publications, and conference presentations.
- 2024-Present Founder and Director, VietGrowth
Educational mentoring initiative supporting students and early-career researchers through: research training; academic writing; graduate school preparation; scholarship applications; internship and career advising; professional development.
- 2023-Present Founder and Director, Variational Analysis and Optimization Laboratory (VAO Lab)

REFERENCES

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