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Adrian Stein

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Google Scholar, GitHub, ResearchGate, LinkedIn

EDUCATION

Ph.D. Student, University at Buffalo 06/2024
Major: Mechanical Engineering | GPA: 4.00
Dissertation: *Global and Local Sensitivity-based Design of Robust Precision Motion Controllers*

M.S., Technical University of Berlin, Germany 05/2019
Major: Mechanical Engineering | GPA: 3.95
Thesis: *Assessment of the Concept of Microturbine Technology as a Range Extender for Electric Vehicles*

B.S., Technical University of Berlin, Germany 04/2016
Major: Mechanical Engineering | GPA: 3.94
Thesis: *Investigation of the influences of catalyst aging and operating points on the functionality of a NOX storage catalytic converter in EU6 diesel cars*

PROFESSIONAL EXPERIENCE

Assistant Professor, Louisiana State University 08/2024
Baton Rouge, Louisiana

Graduate Assistant, University at Buffalo 08/2019–06/2024
Buffalo, New York

Intern, Mitsubishi Electric Research Laboratories (MERL) 08/2022–12/2022
Cambridge, Massachusetts

Master's Thesis, Volkswagen R&D 10/2018–05/2019
Wolfsburg, Germany

Student Employee, Siemens R&D 10/2017–06/2018
Ludwigsfelde, Germany

Visiting Scholar, Kraków University of Technology 10/2017
Kraków, Poland

Visiting Scholar, Norwegian University of Science and Technology (NTNU) 10/2017
Trondheim, Norway

Intern, MAN 07/2017–09/2017
Berlin, Germany

Bachelor's Thesis, IAV Automotive Engineering 10/2015–03/2016
Gifhorn, Germany

Intern, Pontifícia Universidade Católica de Minas Gerais 08/2014–10/2014
Belo Horizonte, Brazil

RESEARCH INTEREST

- Global Sensitivity Analysis, Uncertainty Quantification, and Polynomial Chaos Expansion
- Optimal Control under Uncertainty (Chance-Constrained Optimization and Control Barrier Functions)
- Precision Motion Control and Vibration Suppression
- Autonomous Systems and Decision-Making under Uncertainty
- UAV Guidance, Control, and Autonomous Interception using Data-Driven Methods (EDMD)

RESEARCH FUNDING

External Funding

Reference Governor-Based Vibration Suppression for Safe and Precise Landing on NASA's STAR Testbed 2026
LaSPACE GSRA (NASA) • $10,000 • Single PI

Adaptive Input Shaping Using Camera-Based Payload State Estimation for the NASA LSMS 2026
LaSPACE GSRA (NASA) • $10,000 • Single PI

Learning-Based Model Predictive Control for Autonomous Quadcopter Navigation via EDMD-c 2026
LaSPACE LURA (NASA) • $4,500 • Single PI

Optimal Periodic Trajectory Generation for Long-Range Autonomous Cargo Delivery Using Fixed-Wing UAVs 2026
LaSPACE LURA (NASA) • $4,500 • Single PI

Design and Experimental Evaluation of Drivetrain Configurations for Performance Optimization in an R/C Vehicle Platform 2026
Louisiana Board of Regents • $5,000 • Single PI

Development of a Low-Cost Autonomous Vehicle Platform for Real-Time Navigation and Sensing 2026
Louisiana Board of Regents • $5,000 • Single PI

Precision Motion Control for the NASA LSMS Crane Across Variable Payload Operations 2026
LaSPACE RAP (NASA) / Louisiana Board of Regents • $39,639 • Single PI

Vibration Control on the Lightweight Surface Manipulation System Under Nonzero Initial Conditions 2026
Louisiana Board of Regents • $9,000 • Single PI

Visual Detection of Aerial Intruders: Drone-Based Sky Surveillance Using an Onboard Camera 2025
LaSPACE LURA (NASA) • $10,000 • Single PI

Real-World Implementation of Time-Delay Filters for Systems with Nonzero Initial Conditions: A Gantry Crane Case Study 2025
LaSPACE LURA (NASA) • $10,000 • Single PI

Advanced Bayesian Estimation and Global Sensitivity Optimization for Unmanned Aerial Systems 2025
LaSPACE GSRA (NASA) • $10,000 • Single PI

Enhancing Drone Detection with Adaptive Wiener Filtering in Noisy and Dynamic Environments 2025
LaSPACE LURA (NASA) • $4,500 • Single PI

Model-Free Trajectory Tracking via Intelligent PID Control and Input Shaping 2025
LaSPACE LURA (NASA) • $10,000 • Single PI

Object Identification from Motion Using Physics-Informed Neural Networks 2025
LaSPACE GSRA (NASA) • $9,998 • Single PI

Development of a Liquid Metal 3D Printing Platform 2025
Louisiana Board of Regents • $5,000 • Single PI

Design and Construction of a Fixed-Wing UAV Platform for Intruder Classification 2025
Louisiana Board of Regents • $5,000 • Single PI

Internal Funding

Big Ideas in Conferences, Symposia & Seminars at LSU 2026
LSU Provost's Fund • $25,000 • Lead PI • https://repository.lsu.edu/lsu_control/

HONORS & AWARDS

Longwell Award for Instructor Excellence 05/2025
Louisiana State University
Making significant contributions to early years of student's journey through quality instruction in entry-level engineering courses

Presidential Fellowship 08/2019–08/2023
University at Buffalo
One of the most prestigious fellowships for international Ph.D. students

Mark Diamond Research Fund Award 06/2022
University at Buffalo
Funded large-scale 3D printer project ($2,850)

Silent Hoist and Crane Co., Materials Handling Prize Award 05/2021
University at Buffalo
1st Place awarded with ($4,000)

Graduate Research Competition of the Department of MAE 02/2021
University at Buffalo
2nd Place

German National Scholarship 10/2016–10/2018
Federal Ministry of Education and Research & MAN Diesel & Turbo SE

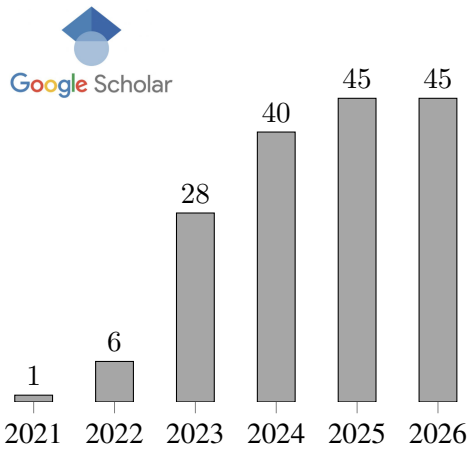
Federal Ministry of Education and Research & DAAD Scholarship 10/2017
Nordic Water Network with NTNU and Kraków University of Technology

Erasmus+ Scholarship 09/2016–06/2017
Technical University of Berlin
For study abroad at Peter the Great St. Petersburg Polytechnic University, Russia

German National Scholarship 10/2015–04/2016
Federal Ministry of Education and Research & Siemens AG Power and Gas Division

PUBLICATIONS

ORCID, **Web of Science**, **Google Scholar**



Aug. 14, 2024	**July 23, 2026**
(Joined LSU)	(Now)
Citations: 91	Citations: 165
h-index: 3	h-index: 5
i10-index: 1	i10-index: 3

Refereed Journal Papers

A. Stein's UG/G students underlined once. Corresponding author denoted by (*)

J6. A. Stein* and T. Singh, "Shapley Effects as a Global Sensitivity Metric for Robust Design and Control". Optimal Control Applications and Methods; 46(5):2294-2310, May 2025.

J5. D. Vexler, A. Stein, T. Singh*, "Tabletop experiment to determine the center of percussion of a baseball bat", International Journal of Mechanical Engineering Education, Aug. 2024.

J4. A. Stein and T. Singh*, "Convex Optimization Based Design of Finite Impulse Response Filters for Reference Shaping", ASME. J. Dyn. Sys., Meas., Control. ; 146(5): 051003, Jun. 2024.

J3. A. Stein and T. Singh*, "Minimum time control of a gantry crane system with rate constraints", Mechanical Systems and Signal Processing, vol. 190. Elsevier BV, p. 110120, May 2023.

J2. A. Stein, T. Parcic, and T. Singh*, "From playground swings to sway control of cranes: An active pendulum experiment", International Journal of Mechanical Engineering Education, vol. 51, no. 3. SAGE Publications, pp. 139–154, Feb. 23, 2023.

J1. A. Stein, M. Nouh, and T. Singh*, "Widening, transition and coalescence of local resonance band gaps in multi-resonator acoustic metamaterials: From unit cells to finite chains", Journal of Sound and Vibration, vol. 523. Elsevier BV, p. 116716, Apr. 2022.

Conference Proceedings and Presentations

A. Stein's UG/G students underlined once. Corresponding author denoted by (*)

C17. K. Baker, S. Maharjan, T. Hlayel, O. Ogunbodede, D. Dunphy, and A. Stein*, "Global Sensitive-Based Input Shaping for UAV-Payload Precision Motion Control", 2026 Conference on Decision and Control (CDC), IEEE, Dec. 15-18, 2026.

C16. N. N. Aung, H. Shin, A. Lawlor, and A. Stein*, "Which Hyperparameters Matter? A Game-Theoretic Framework for Interpretable Hyperparameter Sensitivity Analysis", 2026 International Conference on Machine Learning and Applications (ICMLA), IEEE, Oct. 5-7, 2026.

C15. N. N. Aung, B. Wight, and A. Stein*, "Adaptive Input Shaper Design for Unknown Second-Order Systems with Real-Time Parameter Estimation", 2026 American Control Conference (ACC), IEEE, May 26-29, 2026.

C14. R. Ibarra, K. Baker, P. Molaei, A. Stein, and H. Gilbert*, "Input Shaping for Point-to-Point Motion with a Continuum Robot Arm", 2026 American Control Conference (ACC), IEEE, May 26-29, 2026.

C13. J. Güttler, K. Baker, P. Saha, J. Warner, and A. Stein*, "Polynomial Chaos-based Input Shaper Design under Time-Varying Uncertainty", 2026 American Control Conference (ACC), IEEE, May 26-29, 2026.

(Chair for Session: Optimal Control I)

C12. E. Mountain, A. Stein, J. Maxime, and T. Singh*, "Differential Flatness Based Path Planning Around Obstacles of a 2D Gantry Crane", 2026 American Control Conference (ACC), IEEE, May 26-29, 2026.

C11. N. N. Aung, N. Muralles, and A. Stein*, "Object Identification Under Known Dynamics: A PIRNN Approach for UAV Classification", 2025 International Conference on Machine Learning and Applications (ICMLA), IEEE, Dec. 3-5, 2025.

C10. K. Baker and A. Stein*, "Robust Time-Delay Filter Design for Precision Motion Control with Nonzero Initial Conditions", 2025 Conference on Control Technology and Applications (CCTA), IEEE, Aug. 25-27, 2025.

(Chair for Session: Motion Control)

C9. A. Stein, Y. Wang*, Y. Sakamoto, B. Wang, H. Fang, "Application-Oriented Co-Design of Motors and Motions for a 6DOF Robot Manipulator", 2025 International Conference on Automation Science and Engineering (CASE), IEEE, Aug. 17-21, 2025.

C8. P. Saha, K. Baker, and A. Stein*, "Bayesian Uncertainty Modeling and Risk-Aware Optimization for Unknown Systems", 2025 European Safety and Reliability (ESREL) and Society for Risk Analysis Europe (SRA-E) conference, Jun. 15-19, 2025.

C7. A. Stein and T. Singh*, "Robust Optimal Control of Nonlinear Systems via Homotopy Shooting Method", 2024 American Control Conference (ACC), IEEE, Jul. 10, 2024.

C6. A. Stein, D. Vexler, and T. Singh*, "ArUco based Reference Shaping for Real-time Precision Motion Control for Suspended Payloads", 2024 American Control Conference (ACC). IEEE, Jul. 10, 2024.

C5. A. Stein and T. Singh*, "Global Sensitivity Analysis based Design of Input Shapers", IFAC-PapersOnLine, vol. 55, no. 36. Elsevier BV, pp. 67–72, 2022.

C4. A. Stein, M. Nouh, and T. Singh, "Conditions and Mechanisms of Local Resonance Band Gap Merging in Dual-Periodic Acoustic Metamaterials", International Mechanical Engineering Congress and Exposition (IMECE), ASME, Oct. 30 - Nov. 3, 2022.

C3. A. Stein and T. Singh*, "Velocity Constrained Time-Optimal Control of a Gantry Crane System", 2022 American Control Conference (ACC), IEEE, Jun. 08, 2022.

(Invited Session - Vibrations: Modeling, Analysis, and Control)

C2. A. Stein and T. Singh*, "Input Shaped Control of a Gantry Crane with Inertial Payload", 2022 American Control Conference (ACC). IEEE, Jun. 08, 2022.

*Moved to virtual format due to COVID-19

C1. A. Stein, M. Nouh, and T. Singh, "Multi-Resonator Elastic Metamaterials: From Series and Parallel to Hybrid Configurations", International Mechanical Engineering Congress and Exposition (IMECE), ASME, Nov. 1-4, 2021.*

Theses

T1. A. Stein, "Global and Local Sensitivity-Based Design of Robust Precision Motion Controllers", Ph.D. Dissertation, State University of New York at Buffalo, Buffalo, NY 14260

Seminars

S3. "Precision Motion Control and Vibration Suppression Under Uncertain Dynamics". Invited seminar at NASA Johnson Space Center, Houston, Texas, USA, May 20, 2026.

S2. "Uncertainty-Aware Vibration Control for Crane and Payload Transport Systems". Invited seminar at NASA Langley Research Center, Hampton, Virginia, USA, January 7, 2026.

S1. "Precision Motion Control: A Game Theory-based Approach for Global Sensitive Controller Design". Invited seminar at the Czech Technical University in Prague (CVUT), Prague, Czech Republic, January 6, 2025.

DIGITAL MEDIA & ONLINE FEATURES

3. Project opportunity for research in Experiential Learning Network (2023)
2. Invited talk at Fellow Research Talks, topic: Nonlinear Control of a Knuckle-Boom Crane With an Inertial Payload (2020)
1. Announcement of the Presidential Fellows (2019)

TEACHING EXPERIENCE

(1) Assistant Professor 08/2024 – Present
Louisiana State University

ME 7953: Optimal Control: [Newly developed course]

Spring 2026	Instructor Evaluation: 4.81/5	Response Rate: 11/13 (85%)

ME 2543: Simulation Methods for Mechanical Engineers:

Fall 2025	Instructor Evaluation: 4.82/5	Response Rate: 28/44 (64%)
Spring 2025	Instructor Evaluation: 4.66/5	Response Rate: 32/45 (71%)

ENGR 4100: Industrial Robotics:

Fall 2024	Instructor Evaluation: 4.88/5	Response Rate: 6/10 (60%)

(2) Teaching Assistant 08/2019 – 06/2024
University at Buffalo

- MAE 340: Dynamic Systems (Fall 2023)

- MAE 543: Continuous Control (Fall 2020, Fall 2021)
- EAS 230: Engineering Computation (Spring 2020)
- EAS 199: Engineering Principles (Fall 2019)

PROFESSIONAL MEMBERSHIP & SERVICES

- **Reviewer/Referee for Scientific Journals**
  - IEEE Transactions on Industrial Informatics
  - Nonlinear Dynamics
  - Journal of Intelligent Material Systems and Structures
  - International Journal of Applied and Computational Mathematics
  - IEEE Transactions on Automation Science and Engineering
  - Optimal Control Applications and Methods
  - IEEE Robotics and Automation Letters
  - Journal of Vibration and Acoustics
  - Journal of Sound and Vibration
  - Control Engineering Practice
  - TWMS Journal of Applied and Engineering Mathematics
  - Transactions on Mechatronics
  - IEEE Transactions on Industrial Electronics
  - ASME Journal of Dynamic Systems, Measurement and Control
- **Reviewer/Referee for Scientific Conferences**
  - International Conference on Machine Learning and Applications 2026 (ICMLA)
  - Annual Learning for Dynamics and Control Conference (L4DC)
  - IEEE International Conference on Robotics and Automation (ICRA)
  - American Control Conference (ACC)
  - IEEE Conference on Control Technology and Applications (CCTA)
  - North American Manufacturing Research Conference (NAMRC)
- **Proposal Reviewer**
  - National Science Foundation (2026)
  - National Science Foundation (2025)
  - LSU Funding for Undergraduate Student Research (2025)
  - Mark Diamond Research Fund for Research Grants (10/2021 - 02/2022)
- **Community Outreach and Engagement**
  - IEEE Member (2025 - present)
  - IEEE Control Systems Society Member (2025 - present)

- President, Mechanical and Aerospace Engineering - Graduate Student Association, University at Buffalo (2022 - 2023)
- Buddy Program Ambassador, Berlin (2017 - 2018)

MENTORING

(1) Ph.D. Students (in progress)

- **Sanjay Maharjan**
  (Aug. 2026 - present)
- **Sean Maki**
  (Aug. 2025 - present)

  Honors & Awards during Ph.D. Tenure:

LaSPACE Graduate Student Research Assistance (GSRA) Program	(2026)
LaSPACE Graduate Student Research Assistance (GSRA) Program	(2025)

- **Nyi Nyi Aung**
  (Jan. 2025 - present)

  Honors & Awards during Ph.D. Tenure:

Travel Fund - American Control Conference (ACC)	(Summer 2026)

- **Karan Baker**
  (Oct. 2024 - present)

  Honors & Awards during Ph.D. Tenure:

LaSPACE Graduate Student Research Assistance (GSRA) Program	(2026)
NSF EPSCoR & Louisiana Board of Regents LINK Award	(Summer 2026)
Travel Fund - American Control Conference (ACC)	(Summer 2026)
LaSPACE Graduate Student Research Assistance (GSRA) Program	(2025)
Travel Fund - Control Technology and Applications Conference (CCTA)	(Summer 2025)

(2) M.S. Students (in progress)

- **Sanjay Maharjan**
  (Oct. 2024 - present)

Master exchange students supervised at University at Buffalo:

Annan Talukder
Paul Eidemüller
Tarik Parcic

(3) Undergraduate Students

Aanooalii Filoialii	NSF EPSCoR & Louisiana Board of Regents SURE Award, 2025-2026
Don Nguyen	LaSPACE LURA Award, 2026-2027
Chaz Chenevert	LaSPACE LURA Award, 2026
	NSF EPSCoR & Louisiana Board of Regents SURE Award, 2026-2027
Khoa Do	
Danny Galeas	
Animesh Bangal	LSU Gulf Scholar, Summer 2026
	Cameron LNG Children of Employees Scholarship
Christian Krueger	

Ericka Dusek	
Heepeom Shin	
Peyton Bell	LaSPACE LURA Award, 2026-2027
Elliott Lombardo	
Peyton Ardoin	
Tri Nguyen	
Alister Whitmore	
Tariq Hlayel	
Sang Nguyen	
James Sirois	
Johannes Güttler	
Abigail Lawlor	
Grant Gueho	
Darren Johnson	S&B Engineers and Constructors Scholarship, Spring 2026
	LaSPACE GPS Scholarship, 2026
Neil Muralles	LaSPACE LURA Award, 2025-2026
Bradley Wight	LaSPACE LURA Award, 2025-2026
Mark Mills	NSF EPSCoR & Louisiana Board of Regents SURE Award, 2025-2026
Carter Burdette	NSF EPSCoR & Louisiana Board of Regents SURE Award, 2025-2026
Dutch Dunphy	LaSPACE LURA Award, 2025-2026
Yousuf Atteia	LaSPACE LURA Award, 2025-2026
	LaSPACE GPS Scholarship, 2026

Undergraduates students supervised at the University at Buffalo:

Alexander Barletta
Rowan Daly
Jacob Derby
Michael Fowler
Casey Hayes
Miaowen Zeng

(4) Senior Design Projects

- Design and Development of an Autonomous Robot for Precision Agriculture Applications (2025 - 2026, Project 48)
- Advanced Class - SAE Aero Design Challenge (2025 - 2026, Project 31)
- 30 Lb Combat Robot (2025 - 2026, 1st place in LSU Bengal Bot Brawl, Project 17)
- Knock Knock Children's Museum Baton Rouge - Crane Redesign and Rebuild (2025, Project 04)
- 30 Lb Combat Robot (2024 - 2025, Project 17)
- 30 Lb Combat Robot (2024 - 2025, Project 22)
- IEEE Autonomous Robotics Competition (2024 - 2025, Project 60)

(5) High School Students

Nathan Pettrey
Mike Daigre
David Vexler

(6) Committee

Edem Gidi	Ph.D. Student in Electrical Engineering (present)
Azmyin Md. Kamal	Ph.D. Student in Mechanical Engineering (present)
Jyotsnamayee Ram	Ph.D. Student in Computer Science (present)
Gowri Priya Sunkara	Ph.D. Student in Mathematics (present)
Roza Homafar	Master Student in Kinesiology (Spring 2026)
Elia Chatham	Bachelor's Thesis (Spring 2025)

TRAINING & COURSEWORK

Louisiana State University 2026

Collaborative Institutional Training Initiative (CITI) Program

- Research Security Training (Combined)
- Responsible Conduct of Research for Engineers
- Conflicts of Interest