Adrian Stein

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EDUCATION

PhD 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 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 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 in Controller Design
- Desensitized Control for Precision Manufacturing
- Precision Motion Control on UAV-Payload Systems
- Large-Scale High-Speed 3D Printing

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 PhD students

Mark Diamond Research Fund Award 06/2022
University at Buffalo
Funded large-scale 3D printer project with $2850

Silent Hoist and Crane Co., Materials Handling Prize Award 05/2021
University at Buffalo
1st Place awarded with $4000

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

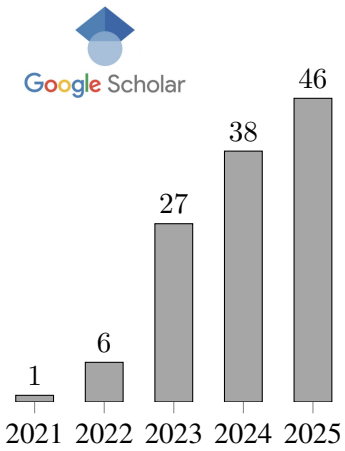
Federal Ministry of Education and Research & DAAD Scholarship 10/2017
Nordic Water Network with NTNU and Kraków University of Technology

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	**Sep. 8, 2025**
(Joined LSU)	(Now)
Citations: 91	Citations: 120
h-index: 3	h-index: 4
i10-index: 1	i10-index: 2

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.

Preprints currently under review:

J1. A. Stein* and T. Singh, "Shapley Effect Estimation using Polynomial Chaos", submitted to: Reliability Engineering and System Safety.

Conference Proceedings and Presentations

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

*Moved to virtual format due to COVID-19

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

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

(Chair for Motion Control Session)

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 IEEE International Conference on Automation Science and Engineering (CASE).

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.

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", ASME International Mechanical Engineering Congress and Exposition (IMECE), Columbus, OH, 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.

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

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

Instructor
Assistant Professor, Louisiana State University *08/2024 - Present*

- ME 2543: Simulation Methods for Mechanical Engineers (Spring 2025, Fall 2025)
- ENGR 4100: Industrial Robotics (Fall 2024)

Teaching Assistant
PhD Candidate, University at Buffalo *08/2019 - 06/2024*

- 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 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**
  - IEEE Conference on Control Technology and Applications (CCTA)
  - North American Manufacturing Research Conference (NAMRC)
- **Proposal Reviewer**
  - 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) PhD Students (in progress)

- **Sean Maki**
  (Aug. 2025 - present)

  Honors & Awards during PhD Tenure:

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

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

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

  Honors & Awards during PhD Tenure:

  LaSPACE Graduate Student Research Assistance (GSRA) Program (2025)
  Travel Fund - Control Technology and Applications Conference (CCTA) (Summer 2025)

(2) M.S. Students

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

Master exchange students supervised at University at Buffalo:

Annan Talukder
Paul Eidemüller
Tarik Parcic

(3) Undergraduate Students

Heepeom Shin
Peyton Bell
Elliott Lombardo
Peyton Ardoin
Tri Nguyen
Alister Whitmore
Tariq Hlayel
Sang Nguyen
James Sirois
Abigail Lawlor
Grant Gueho
Darren Johnson
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

Undergraduates students supervised at University at Buffalo:

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

(4) Senior Design Projects

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

(5) High School Students

Mike Daigre
David Vexler

(6) Committee

Azmyin Md. Kamal	PhD Student in Mechanical Engineering (present)
Jyotsnamayee Ram	PhD Student in Computer Science (present)
Gowri Priya Sunkara	PhD Student in Mathematics (present)
Elia Chatham	Bachelor Thesis (Spring 2025)

TRAINING & COURSEWORK

University at Buffalo *Sep. 2020*
Collaborative Institutional Training Initiative (CITI) Program

- Conflicts of Interest and Commitment
- Mentoring
- Peer Review
- Responsible Conduct of Research