Adrian Stein

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Louisiana State University
Baton Rouge, LA 70803
Google Scholar, ResearchGate, LinkedIn

EDUCATION

PhD Student, University at Buffalo *August 2019 - June 2024*
Major: Mechanical Engineering | GPA: 4.00/4.00
Dissertation: *Global and Local Sensitivity-based Design of Robust Precision Motion Controllers*

M.S., Technical University of Berlin, Germany *May 2019*
Major: Mechanical Engineering | GPA: 3.95/4.00
Study abroad at Peter the Great St. Petersburg Polytechnic University, Russia
Thesis: *Assessment of the Concept of Microturbine Technology as a Range Extender for Electric Vehicles*

B.S., Technical University of Berlin, Germany *April 2016*
Major: Mechanical Engineering | GPA: 3.94/4.00
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 *Aug. 2024*
Baton Rouge, Louisiana

Graduate Assistant, University at Buffalo *Aug. 2019 - Jun. 2024*
Buffalo, New York

Intern, Mitsubishi Electric Research Laboratories (MERL) *Aug. 2022 - Dec. 2022*
Cambridge, Massachusetts

Master Thesis, Volkswagen R&D *Oct. 2018 - May 2019*
Wolfsburg, Germany

Student Employee, Siemens R&D *Oct. 2017 - June 2018*
Ludwigsfelde, Germany

Visiting Scholar, Kraków University of Technology *Oct. 2017*
Kraków, Poland

Visiting Scholar, Norwegian University of Science and Technology (NTNU) *Oct. 2017*
Trondheim, Norway

Intern, MAN *July 2017 - Sep. 2017*
Berlin, Germany

Bachelor Thesis, IAV Automotive Engineering *Oct. 2015 - Mar. 2016*
Gifhorn, Germany

Intern, Pontifícia Universidade Católica de Minas Gerais *Aug. 2014 - Oct. 2014*
Belo Horizonte, Brazil

RESEARCH INTEREST

- Large-Scale High-Speed 3D Printing
- Global Sensitivity Analysis in Controller Design
- Applications of ArUco Markers in Cyber-Physical Systems
- Desensitized Control for Precision Manufacturing
- Precision Motion Control on UAV-Payload Systems

HONORS & AWARDS

08/2019 - 08/2023 **Presidential Fellowship**
University at Buffalo
One of the most prestigious fellowships for international PhD students

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

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

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

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

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

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

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

PUBLICATIONS

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

Refereed Journal Papers

Corresponding author denoted by (*)

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

*Moved to virtual format due to COVID-19

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.*

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 *Aug. 2024 - Present*

- ENGR 4100: Industrial Robotics (Fall 2024)

Teaching Assistant
PhD Candidate, University at Buffalo *Aug. 2019 - Jun. 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**
  - 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
- **Proposal Reviewer**
  - Mark Diamond Research Fund for Research Grants (Oct. 2021 - Feb. 2022)
- **Community Outreach and Engagement**
  - President, Mechanical and Aerospace Engineering - Graduate Student Association, University at Buffalo (2022 - 2023)
  - Buddy Program Ambassador, Berlin (2017 - 2018)

MENTORING

(1) M.S. Students

- Annan Talukder (Fall 2023)
- Paul Eidemüller (Fall 2023)
- Tarik Parcic (Fall 2021)

(2) Undergraduate Students

- Alexander Barletta (Spring 2024)
- Rowan Daly (Fall 2023, Spring 2024)
- Jacob Derby (Summer 2023, Fall 2023, Spring 2024)
- Michael Fowler (Spring 2023)
- Casey Hayes (Spring 2022)
- Miaowen Zeng (Summer 2021)

(3) High School Students

- David Vexler (Summer 2023, Fall 2023, Spring 2024, Summer 2024)

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