

Aspiring to earn a PhD in Mechanical Engineering with a future goal to pursue a career in academic research and engineering education.

## Academic History

### Education:

- PhD Mechanical Engineering | University of Michigan – *In Progress*  
GPA: 4.00
- BS Mechanical Engineering | Virginia Tech, Spring 2019  
Summa Cum Laude – GPA: 3.87

### Membership of Professional Societies:

- Tau Beta Pi National Engineering Honors Society
- Society of Automotive Engineers
- Phi Sigma Pi National Honor Fraternity (Brother at Large, Spring 2018)
- American Society of Mechanical Engineers

## Research and Academic Experience

### Graduate Research Assistant | Tol Lab | Mechanical Engineering | University of Michigan | August 2022 – Current

- Working under Prof. Tol to investigate bianisotropy in elastic materials and leverage this phenomenon for wave tailoring applications such as sensing, messaging, non-destructive evaluation, etc.
- **Technical Presentation:**  
Y. Sharma and S. Tol, "Bianisotropic Elastic Metasurface for Asymmetric Wave Tailoring," International Design Engineering and Technical Conference, Boston, MA, 2023.

### Undergraduate Researcher | Mechanical Engineering | Virginia Tech | January 2018 – January 2019

- Member of Prof. Kurdila's research team working on a dynamical model of a robot that mimicked movements of a bat and accommodated variable degrees of freedom depending on need and application, proving a new way of developing autonomous systems such as self-driving vehicles, exoskeletons, etc.
- **Publication:**  
J. Guo, S. Dadashi, M. Bender, S. Paruchuri, N. Powell, Y. Sharma, H. Kurdila, J. McGlothlin and A. Kurdila, "Probabilistic error bounds on constraint violation for empirical-analytical Lagrangian models of motion," *Nonlinear Dynamics*, 2019.

### Teaching Assistant | Dept. of Engineering Education | Virginia Tech | August 2017 – August 2018

- Mentoring and guiding underclassmen, assisting professors with grading, proctoring exams, providing inputs on course work

## Recent Service and Community Contributions

### Media Officer, ME DEI Alliance | Mechanical Engineering | University of Michigan | August 2022 – Current

- Member of core group in the departmental Diversity, Equity, and Inclusion student group that plans and organizes events and undertakes initiatives that align with the university's overall DEI goals.
- Recent contributions:  
Host and member of organizing group for DEI Book Club, Fall 2023  
Host/Emcee for department's first Accessibility Visibility Symposium, March 2023  
Host and member of organizing group for Black History Month book club, Winter 2023  
Host and member of organizing group for MLK Day event, Jan 2023

## Peer Mentor, MEGC | Mechanical Engineering | University of Michigan | August 2023 – Current

- Serving as mentor in Mechanical Engineering Graduate Council's Peer Mentoring program to help new students acclimatize to all aspects of graduate student life

## Engineering Work Experience

### Product Engineer | Special Projects, Mack Trucks, Volvo Group North America | Alten | August 2019 - Present

- Member of 6-person Product Development team that delivered all-new Mack Medium Duty Series (MD6 and MD7) in less than half the industry standard development time
- Serving as **Project Lead Engineer** for development and implementation of new transmission to the Mack MD, requiring changes in product architecture, pneumatic layout, and development of new components
- Serving as Lead Representative for product architecture, suspensions, and chassis structure for the Mack MD

#### Distinctive Contributions:

- Independently designed and developed the Mack AL190 and Mack AL210 Air Suspension, being offered as optional priced upgrade over standard offering
- Led development of the Mack Taperleaf rear and front suspensions, included as standard suspension setup for the MD range
- Served as Product Architect and contributed to development of chassis layout, driveline layout, and steering system development
- Led the development of virtual vehicle models to support downstream business units
- Created and verified models to predict steering performance, suspension performance and braking performance. These calculators facilitate easy method for design & development and a faster prediction of the vehicle behavior
- Trained auditors on aforementioned calculators for vehicle audit process during production

### Special Projects Intern | Mack Trucks, Volvo Group | May 2018 – May 2019

- Worked on ambitious start-cost project to develop a new product for Volvo Group – the Mack MD Series (part time during semester, full-time during break)
- Served as Mack Trucks' Lead Engineering Representative for development of drivetrain, suspension, steering, and chassis structure

#### Distinctive Contributions:

- Created and verified calculators to predict driveshaft dimensions, driveline phasing, and steering system phasing
- Modified chassis ladder design by introducing a new cross-member for improved structural rigidity of the truck and solved chassis flexing issue during loading/unloading
- Conducted bump steer analyses resulting in geometry changes and improved front suspension and steering integration

### Design Lead | Skunkworks Sub-team, Baja SAE at Virginia Tech | August 2018 – May 2019

- Developed a cutting-edge electronic Limited Slip Differential system aimed at improving vehicle performance at competitions
- Led research group for development of a torque converter that utilized magnetorheological fluid for coupling of driveline components
- Member of 2017-18 Drivetrain Sub-team focused on development of the CVT and overall dynamic performance of vehicle

### Internship Trainee | Hyundai Motor India Ltd. | January 2015 – February 2015

- Learned about the complete automobile industry manufacturing processes including the Materials Management Department, Engine and Powertrain Shop, and Assembly Plant
- Handled documentation pertaining to subcontractors and inventory by working with the Supply Chain Department

## Leadership Experience and Accomplishments

### Media Officer, ME DEI Alliance | Mechanical Engineering, University of Michigan | September 2022 – Present

- Media-related responsibilities to support and further the mission of the Diversity, Equity, and Inclusion student committee

### Dean's Team | College of Engineering, Virginia Tech | April 2017 – May 2019

- Representative of the College of Engineering for interactions with Board Members, Committee of 100, and other visitors
- Speaker and organizer at the information sessions and open houses for prospective students and parents

### Student Ambassador | Dept. of Mechanical Engineering, Virginia Tech | September 2018 – May 2019

- Student representative of the Department, interacting and influencing prospective students and parents at recruiting events

### Volunteer Coordinator | Engineering Open House Committee, Virginia Tech | Nov. 2017 – May 2019

- Served on Managing Committee to organize the Engineering Open House
- Defining roles and charter, leading and training volunteers for various University events