RUI LIU, Ph.D.

Assistant Professor in the Department of Mechanical Engineering
The Kate Gleason College of Engineering, Rochester Institute of Technology
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EDUCATIONAL BACKGROUND

Aug. 2010 – Nov. 2014 **Georgia Institute of Technology**, Atlanta, GA, United States
Doctor of Philosophy (Ph.D.) in Mechanical Engineering
- Ph.D. Advisor: Prof. Shreyes Melkote

Sep. 2008 – Aug. 2010 **Northeastern University**, Boston, MA, United States
Master of Science (M.S.) in Mechanical Engineering
- Advisor: Prof. Hamid Nayeb-Hashemi

Oct. 2001 – Jul. 2005 **Beijing University of Aeronautics & Astronautics**, Beijing, China
Bachelor of Science (B.S.) in Jet Propulsion

WORK EXPERIENCE

Aug. 2018 – present **Rochester Institute of Technology**, Rochester, NY, United States
Assistant Professor in the Department of Mechanical Engineering

Jan. 2015 – Jul. 2018 **Rochester Institute of Technology**, Rochester, NY, United States
Visiting Assistant Professor in the Department of Mechanical Engineering

Aug. 2005 – Sep.2008 **Aircraft Maintenance & Engineering Corporation**, Beijing, China
Process Engineer in Engine Services

RESEARCH FOCUS AND EXPERIENCE

My research covers a wide range of topics in advanced manufacturing, including tool condition monitoring, machining process optimization and machine process simulation during various kinds of machining processes. Specifically, the tool condition monitoring study is to develop a flexible, cost effective, accurate system to monitor cutting tool conditions and relevant machining situations using machine learning techniques. The study of machining process optimization mainly focuses on increasing machining accuracy, improving machined surface quality, and minimize burr formation by selecting appropriate cutting conditions and controlling microstructure of workpiece materials. Furthermore, my machining process simulation study is to understand, analyze and model the material behavior during various machining processes based on the fundamental cutting mechanics and associated microstructure evolution using both numerical and analytical approaches. My research contributions can be used to optimize the cutting conditions to increase the productivity, improve the production quality and extend the tool life. Recently, I also expand my research in fundamentally understanding the roles of human sensory perception and augmenting human senses in building machining knowledge and better integrating machinists into future manufacturing environment. The knowledge acquired from this research is expected to impact the entire machining industry to enable a human-centered and human-machine interactive working mode.

Jan. 2015 – Present **Rochester Institute of Technology**, Rochester, NY, United States
Assistant Professor, Visiting Assistant Professor in the Department of Mechanical Engineering
- Developing a tool condition monitoring system using advanced sensing technologies and machine learning techniques
- Investigating the roles of human sensory perception and augmenting human senses in machining processes
- Understanding the material behavior in soft material cutting

Aug. 2010 – Dec. 2014 **Georgia Institute of Technology**, Atlanta, GA, United States
Research Assistant in the Precision Machining Research Center (PMRC)
Advisor: Prof. Shreyes N. Melkote

- Developing a material model to describe the material behavior and microstructural evolution of the workpiece during the machining process (sponsored by DOE)
- Predictive modeling the machining process in machining of Ti-6Al-4V by the finite element method (sponsored by NIST TIP)

Sep. 2008 – Aug. 2010 **Northeastern University**, Boston, MA, United States
Teaching Assistant
Advisor: Prof. Hamid Nayeb-Hashemi

- Investigating the vibration and failure characteristics of a functionally graded rotating disc
- Investigating and modeling the mechanical and fracture behaviors of sandwich beam

Sep. 2004 – Jul. 2005 **Beijing University of Aeronautics & Astronautics**, Beijing, China
Teaching Assistant in the Jet Propulsion Research Lab
Advisor: Prof. Hui Zhang

TEACHING INTERESTS AND EXPERIENCE

My teaching interests include the courses in the areas of statics (junior), strength of materials (junior / senior), materials science with applications (junior / senior), finite element method (senior / graduate) and manufacturing processes (junior / senior). I also have extensive experience in mentoring and advising undergraduate and graduate students in planning and conducting high quality, productive research work with published research results.

Assistant Professor, Visiting Assistant Professor at Rochester Institute of Technology

- Fundamentals of Mechanics (MECE 200): Spring 2016
- Strength of Materials I (MECE 203): Spring 2015, Fall 2015, Spring 2016, Spring 2017, Spring 2018
- Fundamentals of Material Science (MECE 304): Spring 2018, Spring 2019, Spring 2020, Spring 2021
- Materials Science with Applications (MECE 305): Spring 2015, Fall 2016, Spring 2017
- Materials Science with Applications Laboratory (MECE 306): Spring 2015
- Strength of Materials II (MECE 350): Spring 2022
- Manufacturing Processes and Engineering (MECE 570/670): Fall 2017, Fall 2018, Fall 2019, Fall 2020, Fall 2021
- Masters Capstone Project (MECE 792): Spring 2016, Summer 2017, Spring 2021
- Summer Undergraduate Research: Summer 2015, 2016, 2017, 2019, 2021
- Independent Study (MECE 799): Fall 2015, Spring 2017, Summer 2017, Spring 2021
- Cooperative Education (co-op) Research: Summer 2019, Summer 2020, Summer 2021
- Multidisciplinary Senior Design (MECE 497, 498): 2015-2016 (guide), 2016-2017 (sponsor), 2020-2021 (sponsor, guide)

Teaching Assistant at Northeastern University (2009-2010)

- Mechanical Engineering Computation and Design (ME 4508)
- Advanced Mechanics of Materials (ME 5650)
- Dynamics and Mechanical Vibration (ME 5655)

Teaching Practicum at Georgia Institute of Technology

- Manufacturing Processes and Engineering (ME 4210): Fall 2013

Substitute lecturer at Georgia Institute of Technology

- Manufacturing Process Analysis (ME 4215): Fall 2013

JOURNAL PUBLICATIONS

1. Zhang, Shuhuan, Changfeng Ge, and **Rui Liu**. “Mechanical Characterization of Polydimethylsiloxane (PDMS) Substrate for Wearable Strain Sensors.” *Sensors and Actuators A: Physical 341* (2022): 113580.
2. **Liu, Rui**. "An edge-based algorithm for tool wear monitoring in repetitive milling processes." *Journal of Intelligent Manufacturing* (2022): 1-11.
3. Chen, Xinye, Shuhuan Zhang, Yu Gan, **Rui Liu**, Ruo-Qian Wang, and Ke Du. “Understanding microbeads stacking in deformable Nano-Sieve for Efficient plasma separation and blood cell retrieval.” Journal of Colloid and Interface Science 606 (2022): 1609-1616.
4. **Liu, Rui**, Chao Peng, Yunbo Zhang, Hannah Husarek, and Qi Yu. “A survey of immersive technologies and applications for industrial product development.” *Computers & Graphics* (2021).
5. Stuhr, Benjamin, and **Rui Liu**. “A Flexible Similarity-Based Algorithm for Tool Condition Monitoring.” *Journal of Manufacturing Science and Engineering* 144, no. 3 (2021): 031010.
6. **Liu, Rui**, Achyuth Kothuru, and Shuhuan Zhang. “Calibration-based tool condition monitoring for repetitive machining operations.” *Journal of Manufacturing Systems* 54 (2020): 285-293.
7. Guo, Hong, Fanghua Chen, **Rui Liu**, and Patricia Iglesias. “Lubricating Ability of Magnesium Silicate Hydroxide-Based Nanopowder as Lubricant Additive in Steel-Steel and Ceramic-Steel Contacts.” *Tribology Transactions 63*, no. 4 (2020): 585-596.
8. Li, Zhixiong, **Rui Liu**, and Dazhong Wu. “Data-driven smart manufacturing: Tool wear monitoring with audio signals and machine learning.” *Journal of Manufacturing Processes* 48 (2019): 66-76.
9. Kothuru, Achyuth, Sai Prasad Nooka, and **Rui Liu**. “Application of deep visualization in CNN-based tool condition monitoring for end milling.” *Procedia Manufacturing* 34 (2019): 995-1004.
10. Kothuru, Achyuth, Sai Prasad Nooka, and **Rui Liu**. “Audio-based tool condition monitoring in milling of the workpiece material with the hardness variation using support vector machines and convolutional neural networks.” *Journal of Manufacturing Science and Engineering* 140, no. 11 (2018).
11. Kothuru, Achyuth, Sai Prasad Nooka, and **Rui Liu**. “Application of audible sound signals for tool wear monitoring using machine learning techniques in end milling.” *The International Journal of Advanced Manufacturing Technology* 95, no. 9-12 (2018): 3797-3808.
12. **Liu, Rui**, Elijah Eaton, Mendy Yu, and Jason Kuang. “An investigation of side flow during chip formation in orthogonal cutting.” *Procedia Manufacturing* 10 (2017): 568-577.
13. Melkote, Shreyes N., **Rui Liu**, Patxi Fernandez-Zelaia, and Troy Marusich. “A physically based constitutive model for simulation of segmented chip formation in orthogonal cutting of commercially pure titanium.” *Cirp Annals* 64, no. 1 (2015): 65-68.
14. **Liu, Rui**, Meisam Salahshoor, Shreyes N. Melkote, and Troy Marusich. “A Unified Material Model Including Dislocation Drag and Its Application to Simulation of Orthogonal Cutting of OFHC Copper”, *Journal of Materials Processing Technology,* Vol. 216(2015): 328-338.
15. **Liu, Rui**, Meisam Salahshoor, Shreyes N. Melkote, and Troy Marusich. “The prediction of machined surface hardness using a new physics-based material model.” Procedia CIRP 13 (2014): 249-256.
16. **Liu, Rui**, Meisam Salahshoor, Shreyes N. Melkote, Troy Marusich. “A Unified Internal State Variable Model for Inelastic Deformation and Microstructure Evolution in SS304”, *Materials Science and Engineering: A*., Vol. 594 (2014): 352-363.
17. **Liu, Rui**, Shreyes N. Melkote, Raghuram Pucha, John Morehouse, Xiaolin Man, Troy Marusich. “An Enhanced Constitutive Material Model for Machining of Ti–6Al–4V Alloy”, *Journal of Materials Processing Technology,* Vol. 213(2013): 2238-3346.

CONFERENCE PROCEEDINGS AND PUBLICATIONS

1. **Liu, Rui**, Andrew Greeley, Shuhuan Zhang, Denis Cormier, and Patricia Iglesias. “Effect of Inherently Porous Structure Produced by Metal Fused Filament Fabrication on the Tribological Behavior of Lubricated Steel-Steel Contact." *ASME International Manufacturing Science and Engineering Conference,* West Lafayette, Indiana, USA, 2022.
2. Zhang, Yunbo, Matt Ryan, Yiwen Wang, Qinqin Xiao, and **Rui Liu**. “Immersive Virtual Reality Training with Error Management for CNC Milling Set-Up." *ASME International Manufacturing Science and Engineering Conference,* West Lafayette, Indiana, USA, 2022.
3. Jarosz, Krzysztof, Yunbo Zhang, and **Rui Liu**. “Investigating the Role of Auditory Perception of Cutting Process Conditions in CNC Machining.” *ASME International Manufacturing Science and Engineering Conference,* West Lafayette, Indiana, USA, 2022.
4. Zhang, Shuhuan and **Rui Liu**. “An Investigation of Chipping Propagation on Carbide Tool in End Milling for Prototyping.” *ASME International Manufacturing Science and Engineering Conference,* West Lafayette, Indiana, USA, 2022.
5. Stuhr, Benjamin and **Rui Liu**. “A Flexible Similarity-Based Algorithm for Tool Condition Monitoring.” *ASME International Manufacturing Science and Engineering Conference,* Virtual Conference, USA, 2021.
6. **Liu, Rui**. “A Novel Edge Computing Based Architecture for Intelligent Tool Condition Monitoring.” *ASME International Manufacturing Science and Engineering Conference,* Virtual Conference, USA, 2020.
7. Kothuru, Achyuth, Sai Prasad Nooka, and **Rui Liu**, “Application of Deep Visualization in CNN-Based Tool Condition Monitoring for End Milling”, *Proceedings of the North American Manufacturing Research Institution of SME, NAMRC 47*, Pennsylvania, USA, 2019.
8. Alzahrani, Abdullah M., **Rui Liu**, and Jason R. Kolodziej, “Acoustic Assessment of an End Mill for Analysis of Tool Wear”, *Annual Conference of the Prognostics and Health Management Society*, Philadelphia, Pennsylvania, USA, 2018.
9. Kothuru, Achyuth, Sai Prasad Nooka, and **Rui Liu**. “Audio-Based Condition Monitoring in Milling of The Workpiece Material with The Hardness Variation Using Support Vector Machines and Convolutional Neural Networks”, *ASME International Manufacturing Science and Engineering Conference,* College Station, Texas, USA, 2018.
10. Kothuru, Achyuth, Sai Prasad Nooka, Patricia Iglesias Victoria, and **Rui Liu**. “Application of audible sound signals for tool wear monitoring and workpiece hardness identification in gear milling using machine learning techniques.” In *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 58240, p. V010T11A030. American Society of Mechanical Engineers, 2017.
11. Guo, Hong, **Rui Liu**, Alfonso Fuentes-Aznar, and Patricia Iglesias Victoria. “Friction and wear properties of halogen-free and halogen-containing ionic liquids used as neat lubricants, lubricant additives and thin lubricant layers.” In *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 58240, p. V010T11A041. American Society of Mechanical Engineers, 2017.
12. Kothuru, Achyuth, Sai Prasad Nooka, and **Rui Liu**. “Cutting Process Monitoring System Using Audible Sound Signals and Machine Learning Techniques: An Application to End Milling.” *ASME International Manufacturing Science and Engineering Conference*, Los Angeles, CA, USA, 2017.

13. **Liu, Rui**, Elijah Eaton, Mendy Yu, and Jason Kuang. “An Investigation of Side Flow during Chip Formation in Orthogonal Cutting”, *Proceedings of the North American Manufacturing Research Institution of SME,* Los Angeles, CA, USA, 2017.
14. Stringer, Brian, **Rui Liu**, Alfonso Fuentes Aznar, and Patricia Iglesias. “Effect of Cutting Conditions on Dimensional Accuracy and Surface Roughness in Traditional Milling of Steel”, *ASME International Mechanical Engineering Congress & Exposition*, Phoenix, Arizona, 2016.
15. **Liu, Rui**, Meisam Salahshoor, Shreyes N. Melkote, Jayanti Subramaniam, and Troy Marusich. “A Unified Approach to Model Material Behavior and Microstructure Evolution in Machining OFHC Copper”, *ASME International Manufacturing Science and Engineering Conference,* Detroit, Michigan, USA, 2014.
16. **Liu, Rui**, Hamid Nayeb-Hashemi, Masoud Olia, and Ashkan Vaziri. “On Transverse Vibrations of Functionally Graded Rotating Hollow Disk”, *ASME 2010 International Mechanical Engineering Congress & Exposition*, British Columbia, Canada, 2010.
17. **Liu, Rui**, Hamid Nayeb-Hashemi, “Vibration Response of Functionally Graded Rotating Disk with a Circumferential Crack”, *ASME 2010 International Mechanical Engineering Congress & Exposition*, British Columbia, Canada, 2010.

INVITED LECTURES & SEMINARS

- **R. Liu,** “A Novel Edge Computing Algorithm for Tool Condition Monitoring in Machining”, ***NIST MEP National Network Industry 4.0 Working Group***, July, 2020.
- **R. Liu,** “New Progresses of Tool Condition Monitoring in the Era of Industry 4.0”, ***Caron Engineering Inc.***, Wells, Maine, January, 2020.
- **R. Liu,** “New Progress and Prospects of Machining Monitoring and Soft Material Cutting”, Department of Agricultural and Biosystems Engineering at ***Iowa State University***, Ames, Iowa, June, 2019.
- **R. Liu,** “New Progress and Prospects of Machining Monitoring and Soft Material Cutting”, ***University of Wisconsin–Madison***, Madison, Wisconsin, June, 2019.
- **R. Liu,** “New Developments in Machining Simulation Using a Unified Material Model and Machining Monitoring Using Machine Learning Techniques”, Department of Mechanical Engineering at ***Iowa State University***, Ames, Iowa, June, 2019.
- **R. Liu,** “New Developments in Machining Simulation Using a Unified Material Model and Machining Monitoring Using Machine Learning Techniques”, ***University of Texas at Arlington***, Arlington, Texas, March, 2018.
- **R. Liu,** “New Developments in Machining Simulation Using a Unified Material Model and Machining Monitoring Using Machine Learning Techniques”, ***Miami University***, Oxford, Ohio, February, 2018.
- **R. Liu,** “New Developments in Machining Simulation Using a Unified Material Model and Machining Monitoring Using Machine Learning Techniques”, ***University of New Hampshire***, Durham, New Hampshire, February, 2018
- **R. Liu,** “Physics-Based Constitutive Modeling for Machining & Audio-Based Tool Condition Monitoring”, ***Saint-Gobain's R&D Center***, Northborough, Massachusetts, August, 2017.
- **R. Liu,** “Advances in Recent Research on Machining Process Monitoring and Simulation”, ***Program Advisory Committee***, Rochester, New York, May, 2017.
- **R. Liu,** “Physics-based Constitutive Modeling for Machining & Machining Process Monitoring”, ***GE Global Research Center***, Albany, New York, September, 2016.
- **R. Liu,** “New Progress in Gear Cutting Measurements and Monitoring”, ***Gleason Works***, Rochester, New York, August 2016.

- **R. Liu,** "A Unified Constitutive Material Model with Application to Machining", ***University at Buffalo***, Buffalo, New York, February, 2016.
- **R. Liu, "**Integrating Analytical Models with Finite Element Models: An Application in Gear Hobbing", ***Gleason Works***, Rochester, New York, May 2015.
- **R. Liu,** "FEM Modeling for Gear Hobbing", ***Gleason Works***, Rochester, New York, March 2015.
- **R. Liu,** "Numerical and Analytical Modeling for Virtual Machining", ***Kennametal***, Latrobe, Pennsylvania, March 2015.
- **R. Liu**, M. Salahshoor, S.N. Melkote, "Physics-based Constitutive Modeling for Machining", ***2013 Third Wave International Users Conference,*** Pittsburgh, Pennsylvania, USA, May 2013.
- **R. Liu**, R.V. Pucha, M. Salahshoor, J. Morehouse, S.N. Melkote," Integrated Multiscale physics-based predictive modeling", ***NIST TIP Project Close Out Meeting,*** Minneapolis, Minnesota, January 2013.
- **R. Liu**, R.V. Pucha, J. Morehouse, S.N. Melkote, "Constitutive and Microstructure Evolution Models for Machining of Metals", ***2012 Third Wave International Users Conference,*** Minneapolis, Minnesota, May 2012.
- **R. Liu**, J. Morehouse, "Modeling for Development of Machinable Advanced Alloys", ***2011 Third Wave International Users Conference,*** Jacksonville, Florida, May 2011.

INTERNAL SCIENTIFIC LECTURES

- **R. Liu,** "New Developments in Machining Simulation and Machining Monitoring", Graduate Research Seminars, ***Rochester Institute of Technology***, Rochester, New York, February 2019.
- **R. Liu,** "Machining Process Monitoring using Machine Learning Techniques", Spring Semester Research Forum, ***Rochester Institute of Technology***, Rochester, New York, February 2017.
- **R. Liu,** "Modeling for Cutting Force and Tool Wear Predictions with Application to Gear Hobbing", Spring Semester Research Forum, ***Rochester Institute of Technology***, Rochester, New York, September 2015.
- **R. Liu,** "A Unified Constitutive Material Model with Application to Machining", Spring Semester Research Forum, ***Rochester Institute of Technology***, Rochester, New York, January 2015.

PATENTS/DISCLOSURES

- **R. Liu**, "Calibration-Based Tool Condition Monitoring System for Repetitive Machining Operations." U.S. Patent Application No. 17/291,783.
- **R. Liu**, S.N. Melkote, J. Morehouse, R.V. Pucha, "Constitutive Material Model Subroutines for Flow Stress Determination in Ti-6Al4V To Be Used in Third Wave Systems AdvantEdge software", Invention disclosure submitted to the Georgia Institute of Technology.

PROFESSIONAL AFFILIATIONS

- Member, American Society of Mechanical Engineers (ASME)
- Member, Society of Manufacturing Engineering (SME)
- Member, American Gear Manufacturers Association (AGMA)
- Member, American Society for Engineering Education (ASEE)

JOURNAL REVIEWING

- IEEE Robotics and Automation Letters

- Journal of Manufacturing Processes
- International Journal of Precision Engineering and Manufacturing-Green Technology
- Robotics and Computer Integrated Manufacturing
- International Journal of Advanced Manufacturing Technology
- Materials
- Precision Engineering
- ASME Journal of Manufacturing Science and Engineering
- ASME Journal of Tribology
- International Journal of Materials Research
- Materials and Manufacturing Processes
- Materials & Design
- Journal of Manufacturing Systems
- International Journal of Machine Tools and Manufacture
- Robotics and Computer Integrated Manufacturing

INTERNATIONAL CONFERENCE REVIEWING

- ASME International Conference on Manufacturing Science and Engineering, 2016-present
- SME/NAMRI-North American Manufacturing Research Conference, 2016-present
- ISFA International Symposium on Flexible Automation

DOCTORAL THESES SUPERVISED AS PRIMARY ADVISOR

- **Shuhuan Zhang**, Ph.D. Mechanical Engineering, “Soft Material Cutting”, Fall 2019 – expected Summer 2023.
- **Krzysztof Jarosz**, Ph.D. Mechanical Engineering, “Remote Machining”, Fall 2021 – expected Summer 2025.
- **Yan-Ting Chen**, Ph.D. Mechanical Engineering, “Sensory Augmentation in Monitoring”, Fall 2021 – expected Summer 2025.

MASTER’S THESES OR PROJECTS SUPERVISED AS PRIMARY ADVISOR

- **Bob Yang**, Master’s Thesis, Mechanical Engineering, Fall 2021 – expected Summer 2023.
- **Shuhuan Zhang**, Master’s Thesis, “A Comprehensive Investigation of Carbide Tool Performance under Various Cutting Condition in End Milling of Low Carbon Steel”, Summer 2017 - Summer 2019.
- **Achyuth Kothuru**, Master’s Thesis, “Application of Audible Signals for Cutting Process Monitoring Using Machine Learning Techniques”, Summer 2016 – July 2017.
- **Joseph Contreras,** Project with Paper, “Develop a Remote Automated Machining Process”, Fall 2021.
- **Bob Yang**, Independent Study, “Toolpath Optimization based on Tool Wear”, Fall 2021.
- **Torie Adler,** Independent Study, “Formal Review Paper Investigating Agile Manufacturing”, Spring 2021.
- **Kenan Tautges,** Independent Study, “Design & Development of a Needle Insertion Device for Measuring Axial & Rotational Forces”, Spring 2021.
- **Ashish Varma Chintalapati,** Project with Paper, “Vibration Generator”, Spring 2021.

- **Akash Nograiya,** Project with Paper, “Finite element analysis modeling for soft material cutting”, Spring 2021.
- **Srinivas Sourav Rallapalli,** Project with Paper, “Factors and Parameters affecting the Cutting Process and Optimizing Methods”, Spring 2021.
- **Akshaykumar Laxmanbhai Patel**, Independent Study, “Measuring Microscopic Deformations with Digital Image Correlation”, Spring 2019.
- **Andrew Peterson**, Project with Paper, “Real-Time Tool Condition Monitoring System”, Summer 2017.
- **Prasanna Athi**, Independent Study, “Investigation of Influences of Microstructure of Workpiece Materials on Machined Surface Integrity”, Summer 2017.
- **Yizhang Guo**, Project with Paper, “Design and Development of a Strain Gauge Based Dynamometer”, Spring 2016 – Summer 2016.
- **Yi Li**, Project with Paper, “Design and Development of a Strain Gauge Based Dynamometer”, Spring 2016 – Summer 2016.
- **Brian Stringer**, Independent Study, “Effect of Cutting Conditions on Dimensional Accuracy and Surface Roughness in Traditional Milling of Steel”, Fall 2015.

UNDERGRADUATE STUDENT SUPERVISION

- **Benjamin L. Stuhr,** Co-op Research Project, “An Experimental Investigation of the Effect of Surface Roughness on Soft Tissue Friction”, Summer 2021.
- **Jason Bogacz,** Co-op Research Project, “Vibration Generator”, Summer 2021.
- **Jason Bogacz**, Independent Study, “Design & Development of a Needle Insertion Device for Measuring Axial & Rotational Forces”, Spring 2021.
- **Bob Yang**, Independent Study, “Factors and Parameters affecting the Cutting Process and Optimizing Methods”, Spring 2021.
- **Benjamin L. Stuhr,** Co-op Research Project, “A study of tool condition monitoring using sensor fusion”, Summer 2020.
- **Bob Yang,** Co-op Research Project, “A study of friction mechanisms between soft polymeric materials and metallic surfaces”, Summer 2019.
- **Robert Sokolowski,** Independent Study, “Research design of current technology associated with snowboarding, primarily bindings, and snowboards”, Spring 2018.
- **Andrei Biswas**, supported by Summer Undergraduate Research Fellowship program, “Application of Audible Sound Signals for Chip Type Identification in Machining Using Machine Learning Techniques”, Summer 2017.
- **Madeline Mooney**, supported by Summer Undergraduate Research Fellowship program, “Real-Time Tool Condition Monitoring System Development”, Summer 2017.
- **Riley Starr**, supported by Summer Undergraduate Research Fellowship program, “Investigation of Influences of Microstructure of Workpiece Materials on Burr Formation in Milling”, Summer 2017.
- **Christopher Ferri**, Independent Study, “Investigation into Orthogonal Cutting and the effects on Burr and Chip Formation”, Spring 2017.
- **Zach Cooper**, supported by Summer Undergraduate Research Fellowship program, “Investigation of Annealing Effects on the Plastic Gear Cutting”, Summer 2016.

- **Elijah Eaton**, supported by Summer Undergraduate Research Fellowship program, "Investigating Material Behavior of Machined Chips in Orthogonal Cutting", Summer 2015.
- **Mendy Yu**, supported by Summer Undergraduate Research Fellowship program, "Investigating Material Behavior of Machined Chips in Orthogonal Cutting", Summer 2015.

THESIS COMMITTEE

1. ***Doctoral Thesis Committee Member,*** for Ms. Hong Guo, doctoral student in the field of tribology, Department of Mechanical Engineering, Fall 2019 – Summer 2021.
2. ***Doctoral Thesis Committee Member***, for Mr. Manoj Meda, doctoral student in the field of additive manufacturing, Department of Industrial Engineering, Spring 2019 – Summer 2021.
3. ***Doctoral Thesis Committee Member***, for Ms. Yu Kee Ooi, doctoral student in the field of photonics, Department of Electrical Engineering, Fall 2018.
4. ***Master's Thesis Committee Member***, for Ms. Junru Pang, master's student in the field of tribology, Department of Mechanical Engineering, Fall 2020 – Summer 2021.
5. ***Master's Thesis Committee Member***, for Mr. Ajinkya Patil, master's student in the field of additive manufacturing, Department of Industrial Engineering, Fall 2019 -.
6. ***Master's Thesis Committee Member***, for Mr. Avdhesh Bansal, master's student in the field of wetting and tribology, Department of Mechanical Engineering, Fall 2018 – Spring 2020.
7. ***Master's Thesis Committee Member***, for Mr. Akshay Gaikwad, master's student in the field of tribology, Department of Mechanical Engineering, Fall 2018 – Fall 2019.
8. ***Master's Thesis Committee Member***, for Mr. Piyush Kulkarni, master's student in the field of electroactive polymer materials, Department of Mechanical Engineering, Fall 2018 -.
9. ***Master's Thesis Committee Member***, for Ms. Kosar Samadi, master's student in the field of nanomanufacturing, Department of Mechanical Engineering, Summer 2018 – Spring 2020.
10. ***Master's Thesis Committee Member***, for Mr. Akshat Negi, master's student in the field of pool boiling, Department of Mechanical Engineering, Spring 2018 – Fall 2019.
11. ***Master's Thesis Committee Member***, for Mr. Sameer Ashok Magar, master's student in the field of mechanical engineering and tribology, Department of Mechanical Engineering, Fall 2017 – Spring 2019.
12. ***Master's Thesis Committee Member***, for Mr. Scott Eisele, master's student in the field of gear design, Department of Mechanical Engineering, Spring 2017- Spring 2018.
13. ***Master's Thesis Committee Member***, for Mr. Paarth Mehta, master's student in the field of mechanical engineering and tribology, Department of Mechanical Engineering, Fall 2015 - Fall 2016.
14. ***Master's Thesis Committee Member***, for Mr. Karthik Janardhanan, master's student in the field of mechanical engineering and tribology, Department of Mechanical Engineering, Fall 2015 - Spring 2016.
15. ***Master's Thesis Committee Member***, for Mr. Edward Cigno, master's student in the field of mechanical engineering and tribology, Department of Mechanical Engineering, Fall 2015 - Spring 2016.
16. ***MS&E's Graduate Committee Member***, for Mr. Brian Stringer, master's student in the field of materials science and manufacturing, Department of Materials Science & Engineering, Fall 2015.

PROFESSIONAL SERVICE

1. ***Session Chair*****,** MSEC2020, MSEC2021, MSEC2022.

2. ***Session Co-Chair,*** MSEC2019, MSEC2022.
3. ***Session Chair***, RIT Graduate Showcase, fall 2017.
4. ***Faculty advisor***, Class of 2022 in Mechanical Engineering.
5. ***Organizer,*** Gear Research Seminars at RIT (*http://www.rit.edu/kgcoe/grs/*), fall 2017 to present.
6. ***Faculty Moderator***, Undergraduate Research Symposium, summer 2016.