

# Curriculum Vitae

**Taher Deemyad, Ph.D.**  
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## Education

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| 2016-2021 | Ph. D. Engineering & Applied Science, Mechanical Engineering, Department of Mechanical Engineering, Idaho State University, Idaho, Pocatello, USA. |
| 2014-2016 | Master of Science, Mechanical Engineering, Department of Mechanical Engineering, Idaho State University, Idaho, Pocatello, USA.                    |
| 2003-2010 | Bachelor of Science, Mechanical Engineering, Department of Mechanical Engineering, Azad University, Tehran, Iran.                                  |

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## Research & Work Experiences

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| From 2021 | <ul style="list-style-type: none"><li>• Robotic Research Lab Director ISU</li></ul>   |
| 2015-2016 | <ul style="list-style-type: none"><li>• 3D Printing Lab Director ISU</li></ul>  |
| 2022-2023 | <ul style="list-style-type: none"><li>• Design and Implement Two Novel and Soft Robotics Grippers</li><li>• Design and Implement Two Autonomous Ground Vehicles (AGVs) with Ability to Jump and Pass the Obstacles</li><li>• Design and Implement Two Automatic Systems for Changing the End-Effector for Robotic Arms</li><li>• Design and Implement Automatic Packing System in Grocery Stores</li><li>• Design and Implement Several Foldable Robotic Arms with a Minimum Number of Actuators for Quadcopters</li><li>• Design and Implement a Robotic Dinosaur (Real Size) with the Ability to Walk</li></ul> |
| 2017-2021 | <ul style="list-style-type: none"><li>• Image processing to detect the affected potato plants by potato virus Y (PVY)</li></ul>   |

- Design and build the chassis for an AGV
  - Navigation, and obstacle avoidance methods for an AGV
  - Design and build a prototype of a novel roguing mechanism for removing PVY-infected potato plants
- 2016-2020
- Design and optimization of the coupled mechanisms for multi-fingered robotic hands with skew axes
- 2014-16
- Design of a five-fingered underactuated hand for two-position tasks

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## Teaching Experiences & Mentorship

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- Spring 2024      Engineering Dynamics (ME 2220), Mechatronics (ME 4425/5525), ISU
- Fall 2023        Mentoring **six** graduate students
- Summer 2023    Mentoring one undergraduate student for the **NSF REU** program at **CAES** in the area of Advanced Manufacturing for a Sustainable Energy
- Summer 2023    Mentoring **seven** graduate students
- Spring 2023     Engineering Dynamics (ME 2220), Mechatronics (ME 4425/5525), ISU
- Fall 2022        Kinematics and Dynamics of Mach (ME 3320), Introduction to Robotics (ME 4424/5524), ISU
- 2022-2023      Mentoring two groups of senior students in the department of mechanical engineering for their Senior Design project
- Summer 2022    Engineering Dynamics (ME 2220)
- Summer 2022    Mentoring two graduate students who received Research/Creative Activity Grant
- Spring 2022     Engineering Dynamics (ME 2220), Mechatronics (ME 4425/5525), Advanced Kinematic Design (ME 6644) ISU
- Spring 2022     Mentoring three undergraduate students in a funded project from the “Higher Education Research Council”
- Fall 2021        Kinematics and Dynamics of Mach (ME 3320), Vibration Analysis (4440/5540), Robotic Grasping/Manipulation (ME 6648) ISU

2021-2022	Mentoring two groups of senior students in the department of mechanical engineering for their Senior Design project
Spring 2021	Adjunct faculty: Structured Programming (ME 1165) ISU
Summer 2019	Adjunct faculty: Thermodynamics (ME 3307) ISU
2020-2021	Mentoring a group of senior students in the department of mechanical engineering for their Senior Design project
Spring 2020	Mentoring a group of senior students in the department of mechanical engineering for their Senior Design project

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### Professional & Computer Languages Skills

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CAD Software	<ul style="list-style-type: none"> <li>• SolidWorks</li> <li>• Autocad</li> <li>• Catia</li> </ul>
Programming Languages	<ul style="list-style-type: none"> <li>• Matlab</li> <li>• Mathematica</li> <li>• Python</li> </ul>
Robotic Software	<ul style="list-style-type: none"> <li>• ROS</li> <li>• ArtTreeKS</li> <li>• RobotStudio</li> </ul>
Certified Robotics Training	<ul style="list-style-type: none"> <li>• <b>Certified Teacher of ABB Company</b> for <b>SMART</b> program in <b>STEM</b>, 2023</li> <li>• Robot programming (I) training, ABB Motlow State Community College, 2022</li> <li>• RobotStudio training, ABB Motlow State Community College, 2022</li> <li>• Robot programming training (House of Design Co.), 2019</li> </ul>
Others	<ul style="list-style-type: none"> <li>• Prototyping system/3D printer and motion capture system. (Lab Director, the Academic year 2015-16)</li> </ul>

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### Patents

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- **Taher Deemyad, Anish Sebastian, and Alba Perez-Gracia** Provisional patent application for **“Agricultural Roguing Machine” Application Serial No.: 63/104,937 Filing date: 10/23/2020**

- **Taher Deemyad**, Wesley Thomas, Parker Wegrowski, Jacob Lemrick, Kyler Bingham, and Anish Sebastian. Patent application for “**Lightweight Foldable Robotic Arm for Drones**” **Application Serial No.: 18/316,532 Filing date: May 12, 2023**
- **Taher Deemyad**, Kyler Bingham, Matthew Hessler, and Safal Lama. Provisional patent application for “**Compressible Robot Gripper**” **Application Serial No.: 63/514,467 Filing date: 07/19/2023**
- **Taher Deemyad**, and Safal Lama. Provisional patent application for “**Pin Array Rotary Gripper**” **Application Serial No.: 63/514,458 Filing date: 07/19/2023**

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### Research Grant

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- Amanda Rynes (PI) & **Taher Deemyad (Co-PI)**, CAES Collaboration 2024, “Enhancing Nuclear Power Plant Security with Dog Robot Surveillance Systems”, **(Pending)**
- **Taher Deemyad (PI)**, NASA 2024, “Empowering Idaho's Higher Education: NASA STEM Outreach & Robotics Initiative” **(Pending)**
- **Taher Deemyad (PI)**, NASA 2024, “Revolution in Space Manufacturing: Innovative Additive Manufacturing Method for Zero-Gravity Environments” **(Pending)**
- **Taher Deemyad & Khadijeh Bazargani**, CERE 2024, “An Innovative Solution for Autonomous Precision Pest Control”, CERE **(Pending)**
- **Taher Deemyad & Amir Hafezi**, CERE 2024, “Advancing Ecological Monitoring in Volcanic Environments”, CERE **(Pending)**
- Jae Ryu (PI), **Taher Deemyad (Co-PI)**, IGEM HERC 2023, Air-ground robotics for field scouting to sustain agricultural practices in Idaho **(Not Funded)**
- **Taher Deemyad & Minhaz Zibrán**, ISU CAES Seed grants 2023, Mobile Robot for Physical Security of the Nuclear Power Plant **(Funded)**
- **Taher Deemyad (PI)**, NSF 2023, “CAREER: Enhancing UAV Capabilities for Precision Agriculture by Integrating a Foldable Robotic Arm, Advanced Grasping Mechanism, and Efficient Control System”, **(Not Funded)**
- **Taher Deemyad**, ISU Museum of History 2023, “Robotic-Dinosaur” **(Funded)**
- Vaibhav Yadav (PI), **Taher Deemyad (Co-PI)**, CAES Collaboration Program Development 2023, “Enhancing the Security System of Nuclear Power Plants by Implementing a Network of Drones and Mobile Robots”, **(Not Funded)**

- **Taher Deemyad** & Rajib Mahamud, CERE 2023, “Establishing Educator Seminar Series/Conference and Regional Tribe Summer Camp at ISU”, (**Not Funded**)
- **Taher Deemyad** & Sara Sourani, CERE 2023, “A Smart Autonomous Ground Vehicle with the Ability to Adapt Its Size to Environments”, (**Funded**)
- **Taher Deemyad** & Kyler Bingham, CERE 2023, “Advanced Robotic Arm and Storage System for UAVs”, (**Funded**)
- **Taher Deemyad** & Shaibal Das, CERE 2023, “Leading a Network of Autonomous Ground Vehicles by a Central Controlling System for Agricultural Purposes”, (**Funded**)
- **Taher Deemyad** & Khadijeh Bazargani, CERE 2023, “Economic Effects of Agricultural Automation in Idaho”, (**Funded**)
- Khadijeh Bazargani (Advisor: **Taher Deemyad**), Summer Research/Creative Activity Grant, ISU Graduate School 2023, “Leveraging AI to Quantify the economy of Automation & Robots on Agricultural Productivity”, (**Funded**)
- **Taher Deemyad**, CAES Summer Visiting Faculty 2023, “Improvement in Security Systems of Nuclear Facilities Using Autonomous 4-legged Robots and Aerial Drones Equipped with a Variety of Sensors”, (**Not Funded**)
- **Taher Deemyad**, Office for Research, funding for travel/training, 2022: “A complete advanced robot training at ABB training center at Michigan and receive the ABB certificate”, (**Funded**)
- **Taher Deemyad (PI)**, CAES Seed Grant proposal, 2022 "Experimental and numerical investigation of an integrated HVAC system", (**Not Funded**)
- **Taher Deemyad (Co-PI)**, CAES Seed Grant proposal, 2022 "Experimental Investigation of Volumetric Plasma Enhanced Additive Manufacturing Process", (**Not Funded**)
- **Taher Deemyad**, Idaho NASA EPSCoR Collaboration Grant, 2022, (**Funded**)
- **Taher Deemyad (PI)**, Idaho State Board of Education (SBOE) Grant for STEM, 2021-2022: “Advanced Grasping Mechanism for Drones with the Ability to Detect and Sample Small Objects”, (**Funded**)
- **Taher Deemyad (PI)**, Center for Ecological Research & Education (CERE), 2021-2022: “Improvement of Obstacle Avoidance and Plant Detection Systems for an Autonomous Ground Vehicle for Agricultural Purposes”, (**Funded**)

- **Taher Deemyad (PI)**, Office for Research Internal Small Grant Program, 2021-2022: “A Robotic System for Handling and Packing Fruits in Grocery Stores”, (**Funded**)
- **Taher Deemyad (PI)**, National Science Foundation: “The Foundational Research in Robotics: A robotic hand for handling and packing of irregular shape products in stores”, (In preparation)

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### Funded Research

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- “**Advanced Grasping Mechanism for Drones with the Ability to Detect and Sample Small Objects**” Project was supported by the **Idaho State Board of Education (SBOE) Grant for STEM, 2021-2022, PI: Taher Deemyad**
- “**A Robotic System for Handling and Packing Fruits in Grocery Stores**” Project was supported by the **Office for Research Internal Small Grant Program, ISU, 2021, PI: Taher Deemyad**
- “**Improvement of Obstacle Avoidance & Plant Detection Systems for an Autonomous Ground Vehicle for Agricultural Purposes**” project was supported by the **Center for Ecological Research & Education (CERE), 2021, PI: Taher Deemyad**
- “**Coupling mechanisms for multi-fingered robotic hands with skew axes**” project was supported by the **National Science Foundation (NSF) under Grant No. 1208385.**
- “**The Washie Project**” project was supported by the **Idaho Global Entrepreneurial Mission (IGEM) - Idaho Commerce under Grant No. 003494.**

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### Peer-Reviewed Articles

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| 2024 | Kyler Bingham, Sara Sourani Yancheshmeh, Greesh Vaidya, Arya Ebrahimpour, and <b>Taher Deemyad</b> “Advanced Material Selection and Design Strategies for Optimized Robotic Systems”, International Mechanical Engineering Congress and Exposition (IMECE), ASME (Under review) |
| 2024 | Kyler Bingham, and <b>Taher Deemyad</b> , “Material, Torque, and Structural Study of a Foldable Robotic Arm for Aerial Drones”, International Mechanical Engineering Congress and Exposition (IMECE), ASME (Under review)   |
| 2024 | Sara Sourani Yancheshmeh, Arya Ebrahimpour, <b>Taher Deemyad</b> , “Optimizing Chassis Design for Autonomous Vehicles in Challenging Environments Based on Finite Element Analysis and Genetic Algorithm”,  |

- International Mechanical Engineering Congress and Exposition (IMECE), ASME (Under review)
- 2024 Sharma, Ujwal, Uma Shankar Medasetti, **Taher Deemyad**, Mustafa Mashal, and Vaibhav Yadav. 2024. "Mobile Robot for Security Applications in Remotely Operated Advanced Reactors" *Applied Sciences* 14, no. 6: 2552. <https://doi.org/10.3390/app14062552>
- 2024 Bingham, Kyler C., and **Taher Deemyad** " Design and Kinematic Analysis of an Aerial Robotic Arm for Precision Agriculture", In Intermountain Engineering, Technology, and Computing Conference (I-ETC), May-2024, IEEE (Under review)
- 2024 Hafezi, Amir, and **Taher Deemyad** "Autonomous Surveillance Breakthrough by Implementing Facial Recognition in Dog Robots", In Intermountain Engineering, Technology, and Computing Conference (I-ETC), May-2024, IEEE (Under review)
- 2024 Das, Shaibal, and **Taher Deemyad** " Innovative Automatic Tool Changing Mechanism for Robotic Arms", In Intermountain Engineering, Technology, and Computing Conference (I-ETC), May-2024, IEEE (Under review)
- 2024 Sourani Y., Sara, and **Taher Deemyad** " Optimizing Structural Integrity: Stress Analysis of a Chassis Frame Using SolidWorks", In Intermountain Engineering, Technology, and Computing Conference (I-ETC), May-2024, IEEE (Under review)
- 2024 Bazargani, Khadijeh, and **Taher Deemyad** "Automation's Impact on Agriculture: Opportunities, Challenges, and Economic Effects", *Robotics*, 2024; 13(2):33. <https://doi.org/10.3390/robotics13020033>
- 2023 Bingham, Kyler C., Matthew Hessler, Safal Lama, and **Taher Deemyad** "A Compressible Gripper for Articulated Robotic Arms", *Applied Sciences*, 2023; 13(17):9677.
- 2023 Safal Lama and **Taher Deemyad** "Using A Rotary Spring-Driven Gripper to Manipulate Objects of Diverse Sizes and Shapes", *Applied Sciences*, 2023; 13(14):8444
- 2022 Wesley Thomas, Parker Wegrowski, Jacob Lemrick, and **Taher Deemyad** "Lightweight foldable robotic arm for drones", In Intermountain Engineering, Technology, and Computing Conference (I-ETC, May-2022). IEEE

- 2022 Parker Wegrowski, Jacob Lemrick, Wesley Thomas, and **Taher Deemyad** “Advanced Folding Robotic Arm for Quadcopters”, In Intermountain Engineering, Technology, and Computing Conference (I-ETC, May-2022). IEEE
- 2022 Jacob Lemrick, Wesley Thomas, Parker Wegrowski, and **Taher Deemyad** “Sarrus Linkage Aerial Drone Arm”, In Intermountain Engineering, Technology, and Computing Conference (I-ETC, May-2022). IEEE
- 2021 **Taher Deemyad** and Anish Sebastian “HSL Color Space for Potato Plant Detection in the Field”, Fourth IEEE International Conference on Electrical, Computer and Communication Technologies (ICECCT)
- 2021 **Taher Deemyad**, Vincent Akula, Anish Sebastian, “Compression Analysis Tests for Prototypes Made of Different Polymers ”, International Mechanical Engineering Congress and Exposition (IMECE), ASME
- 2021 **Taher Deemyad**, Vincent Akula, Anish Sebastian, “Mechanisms Design for the Hinge & Battery Lifetime Tests for a Prototype ”, International Mechanical Engineering Congress and Exposition (IMECE), ASME
- 2021 **Taher Deemyad** and Anish Sebastian “Mobile Manipulator and EOAT for In-Situ Virus Detection and Removal”, In 5<sup>th</sup> IFToMM Symposium on Mechanism Design for Robotics (MEDER), Springer
- 2020 **Taher Deemyad**, Omid Heidari, and Alba Perez-Gracia “Singularity design for RRSS mechanism”, In USCToMM Symposium on Mechanical Systems and Robotics (MSR), pages287–297. Springer
- 2020 **Taher Deemyad**, Ryan Moeller, and Anish Sebastian “Chassis design and analysis of an autonomous ground vehicle (AGV) using genetic algorithm”, In Intermountain Engineering, Technology, and Computing Conference (I-ETC, Oct-2020). IEEE
- 2020 Ryan Moeller, **Taher Deemyad**, and Anish Sebastian “Autonomous navigation of an agricultural robot using RTK GPS and Pixhawk”, In Intermountain Engineering, Technology, and Computing Conference (I-ETC, Oct-2020). IEEE
- 2018 **Taher Deemyad**, Neda Hassan Zadeh, and Alba Perez-Gracia “Coupling mechanisms for multi-fingered robotic hands with skew axes”, In 4<sup>th</sup> IFToMM Symposium on Mechanism Design for Robotics (MEDER), pages 344–352. Springer
- 2016 **Taher Deemyad**. “Design of five-fingered underactuated hand for two-position tasks” In Master’s Thesis, Idaho State University



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## Preprint Published Articles

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- 2020                      Ali Tamimi, **Taher Deemyad**, Alba Perez-Gracia, “Enumeration, structural and dimensional synthesis of robotic hands: theory and implementation”, 2020, arXiv:1812.06348v2 (**In preparation to submit in a peer-reviewed journal**)

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## Manuscripts In Preparation

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- **Taher Deemyad** and Anish Sebastian, “An advanced agriculture autonomous vehicle for protecting the field against potato Virus Y (PVY)”
- **Taher Deemyad** “Chassis design for an agricultural autonomous ground vehicle (AGV)”
- **Taher Deemyad** and Anish Sebastian. “Obstacle avoidance system with a 360° LiDAR sensor for an agricultural robot”
- **Taher Deemyad**, and Anish Sebastian. “Potato Plant Detection in the Field by Using Machine Learning & Image Processing”
- Ali Tamimi, **Taher Deemyad**, Alba Perez-Gracia, “Enumeration, structural and dimensional synthesis of robotic hands: theory and implementation”
- **Taher Deemyad**, “Link-based optimization for zero intersection of three fingers robotic hand”

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## Workshops & Trainings

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- Grant Writers’ Seminar and Workshop (NSF), ISU, April-2023
- Attending “**NSF Entering Mentoring**” workshop, ISU, Sep-2022
- Finish 1-week training of “**Programming-I**” course for industrial robotics arms in **ABB** company and received a **certificate**
- Finish 1-week training of “**RobotStudio-I**” course for robot programming in **ABB** company and received a **certificate**

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## Oral Presentation

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- September 2022                      **Taher Deemyad**, “Foldable Robotics arm for Quadcopters”, **NASA STEM Better Together 2022**
- February 2021                      **Taher Deemyad**, “MOBILE MANIPULATOR AND EOAT FOR IN-SITU VIRUS DETECTION AND REMOVAL”, top 6 in 3MT competition, ISU

- April 2021 **Taher Deemyad** “Autonomous Ground Vehicle for Virus Detection and Removal”, 7<sup>th</sup> ISU Graduate Research Symposium
- March 2016 **Taher Deemyad** and Alba Perez-Gracia “Coupled actuation by using Bennett linkages in multi-fingered robotic hand”, ISU Graduate Research Symposium

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### Poster Presentation

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- July 2023 Carlos A. Rivas, **Taher Deemyad** “Automatic Tool Changing Mechanism for Industrial Robotics Arms”, Idaho Conference on Undergraduate Research (ICUR)
- May 2023 Ujwal Sharma, Uma Shankar Medasetti, Mustafa Mashal, **Taher Deemyad**, Vaibhav Yadav “Mobile Robot for Security Applications in Remotely Operated Advanced Reactors”, Center for Advanced Energy Studies (CAES)
- April 2022 Parker Wegrowski, Wesley Thomas, Jacob Lemrick, **Taher Deemyad** “Advanced Folding Robotic Arm for Quadcopters”, ISU Undergraduate Research Symposium
- April 2022 Jacob Lemrick, Wesley Thomas, Parker Wegrowski, **Taher Deemyad** “Single Actuator Sarrus Linkage Arm for Aerial Drones”, ISU Undergraduate Research Symposium
- April 2022 Wesley Thomas, Parker Wegrowski, Jacob Lemrick, **Taher Deemyad** “Lightweight Robotic Arm for Drones”, ISU Undergraduate Research Symposium
- November 2019 **Taher Deemyad** and Anish Sebastian “Simulation of chassis & stress analysis for autonomous terrain robot”, Idaho National Lab
- March 2019 **Taher Deemyad** and Anish Sebastian “In-situ plant virus detection using a scalable, multi-agent robotic sensing and learning collaborative system”, Idaho National Lab
- March 2016 **Taher Deemyad** and Alba Perez-Gracia “Design of a five-fingered underactuated hand for two-position tasks”, ISU Graduate Research Symposium
- March 2015 **Taher Deemyad** and Alba Perez-Gracia “Design of a five-fingered robotic hand with using pulley-belt system”, ISU Graduate Research Symposium

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## **Awards & Scholarships**

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2023	Receive FY23 Year End Office of Research Award, ISU
Summer 2020	Selected for the Grant Writing Fellowship Program, ISU
Fall 2015 – Spring 2016	The Mechanical Engineering Department's GATE Scholarship, ISU
Fall 2018 – Spring 2019	The Frank A. & Becky R. Scholarship, ISU

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## **Professional Activities & Affiliations**

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### **Memberships**

Former Member of the American Society of Mechanical Engineers (ASME)

Former Member of the Institute of Electrical and Electronics Engineers (IEEE)

Former Member of the Robotics and Automation Society (RAS)

Former Member of Phi-Kappa-Phi Honor Society

### **Professional service in journals, conferences, and panels**

Engineering track chair of Intermountain Engineering, Technology, and Computing Conference (I-ETC), 2024

Reviewer of Intermountain Engineering, Technology, and Computing Conference (I-ETC), 2023

Reviewer of Mathematics Journal (MDPI), 2023

Reviewer of Machines Journal (MDPI), 2023

NSF Reviewer, 2023

Co-Chair of Intermountain Engineering, Technology, and Computing Conference (I-ETC), 2023

Reviewer of Agronomy Journal (MDPI), 2022

Reviewer of IEEE International Conference on Robotics and Automation (ICRA), 2021

Reviewer of Machines Journal (MDPI), 2021

### **Synergic Activities**

- Education and Community Engagement: Century High School, Idaho, Pocatello, 2024
- Education and Community Engagement: Pocatello High School, Idaho, Pocatello, 2024
- Leader of Robotics and 3D printing Technology section in **ISU Science Trek** for 3rd, 4th, and 5th grade students, May-2023
- Having a table at the Shoshone-Bannock Jr./Sr. High School STEM Night, 2023
- Robotic workshop for local LDS Young Men's program, ISU, November-2022, ISU
- Invited speaker at Hispanic Youth Leadership Symposium at ISU, October-2021
- Counselor in “Summer Robotics and Engineering Camps” for junior high students (College of Science and Engineering-ISU) Summer-2018
- Contribution to the Bengal STEM Day to setting up the ME department table - 2023

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### **University and Department Service Activities**

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- Member of the Thesis Committee (Advisor) of Three ME Students, 2023
- Member of the Dissertation Committee of an MCE Student, 2023
- Member of the Dissertation Committee (GFR) of one NE Student, 2023
- Member of the Thesis Committee (GFR) of one NE Student, 2023
- Member of the Thesis Committee of a CE Student, 2023
- Member of the Thesis Committee (GFR) of Two CE Students, 2023
- Member of the Academic Integrity Council 2023-2026
- Arrange Transferring Two-Year Associate Degree Students to ISU's Mechanical Engineering Bachelor's Program, 2023

- Member of Search Committee, 2022-2023
- Member of Recruitment Committee, 2022-2023
- Member of Tenure and Promotion Committee, 2022-2023
- Founder and Supervisor of the Kinematica Club (student Robotic Club) at ISU, 2022