

**Postdoctoral Researcher**

**Department of Mechanical Engineering, University of Washington**

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CONTACT  
INFORMATION

Work Email: [tr1@uw.edu](mailto:tr1@uw.edu)

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SKILLS

- Machine Learning: Pytorch, CUDA
- Scientific Computing Software: Python, MATLAB, Mathematica, SPSS
- Biomechanics modeling: ANSYS, Solidworks, VTK
- Medical Image Processing: Python, Freesurfur, Mimics

EDUCATION

**Lehigh University**, Bethlehem, Pennsylvania, USA

Ph.D. in Mechanical Engineering & Mechanics

2019 - 2022

- Advisor: [Professor Hannah Dailey](#)
- Dissertation: *Mechanoregulation Modeling of Bone Fracture Healing in the Tibia from the Perspective of Computational Models and Image Analysis*

M.S. in Mechanical Engineering & Mechanics

2017 - 2019

- Advisor: [Professor Hannah Dailey](#)
- Thesis: *Mechanoregulation Modeling of Bone Healing in Realistic Fracture Geometries*

**Southwest Jiaotong University**, Chengdu, Sichuan, China

B.S., Mechanical engineering and Manufacturing

2011 - 2015

RESEARCH  
EXPERIENCE

**Postdoctoral Researcher**, University of Washington

2022 - 2024

- Developing deep learning architectures for segmentation of brain tumors from multi-contrast Magnetic Resonance Imaging(MRI) scans.
- Developing explainable deep learning framework for transparent decision making in medical image classification and segmentation.
- Investigating foundation model for human-AI collaboration in medical decision-making.

Graduate Research Assistant, Lehigh University

2019 - 2022

- Developed mechanics driven computational models for bone fracture healing simulation.
- Developed image-based biomarker for bone fracture healing outcome assessment.
- Developed patient-specific finite element modelers for virtual mechanical testing of the bone fracture patients.

JOURNAL

Abderezai J., Pionteck A., Chuang Y., Carrasquilla A., Bilgili G., **Ren T.**, et al., "Increased Hindbrain Motion in Chiari I Malformation Patients Measured Through 3D Amplified MRI (3D aMRI)", *Neuroimage Clinical* (2024) (Under review).

**Ren T.**, Inglis B., Salim D., Dailey HL., "Torsion Constants and Virtual Mechanical Tests are Valid Image-Based Surrogate Measures of Ovine Fracture Healing", *Journal of Orthopaedic Research* (2024).

**Ren T.**, Klein K., Brigitte R., Salim D., Dailey HL., "Image-based radiodensity profilometry measures early remodeling at the bone-callus interface in sheep", *Biomechanics and Modeling in Mechanobiology* (2022).

**Ren T.\***, Schwarzenberg P.\*, Klein K., Brigitte R., Salim D., Dailey HL., "Domain-independent simulation of physiologically relevant callus shape in mechanoregulated models of fracture healing", *Journal of Biomechanics* (2021).

**Ren T.**, Dailey HL., "Mechanoregulation modeling of bone healing in realistic fracture geometries", *Bimechanics and Modeling in Mechanobiology* (2020).

CONFERENCE PAPER	Rivera J., Rebala H, <b>Ren T.</b> , Kurt M., Sharma A., “Improving Glioma Segmentation in Low-Resolution Domains with Transfer Learning”, <i>Medical Imaging with Deep Learning (MIDL2024)</i> (Under review).	
	<b>Ren T.</b> , Kurt M., “Re-DiffiNet: Modeling discrepancies in tumor segmentation using diffusion models”, <i>Medical Imaging with Deep Learning (MIDL2024)</i> .	
	<b>Ren T.</b> , Kurt M., “An Optimization Framework for Processing and Transfer Learning for the BraTS 2023 Cluster of Challenges”, <i>International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI2023)</i> .	
PRESENTATIONS	MIDL 2024, Paris, France	2024 Forthcoming
	Re-DiffiNet: Modeling discrepancies in tumor segmentation using diffusion models	
	MICCAI 2023, Vancouver, Canada	Oct 2023
	An optimization framework for processing and transfer learning for the BraTS 2023 cluster of challenges (Poster)	
	BMES 2023, Seattle, WA	Oct 2023
	Optimized framework for processing and transfer learning for brain tumor segmentation (Poster)	
	SB3C 2022, Eastern Shore, Maryland	June 2022
	Mechanoregulatory models of fracture repair and remodeling calibrated using imaging data from sheep (Podium)	
	ORS (Orthopaedic Research Society) 2022, Tampa, FL	Feb 2022
	Image-based radiodensity profilometry measures early remodeling at the bone-callus interface in sheep (Poster)	
	ORS (Orthopaedic Research Society) 2021, Long Beach, CA	Feb 2021
	Method for image-based radiodensity profilometry to measure remodeling at the bone-callus interface in sheep (Poster)	
	ORS (Orthopaedic Research Society) 2021, Long Beach, CA	Feb 2021
	Domain-independent simulation of physiologically relevant Callus Shape in mechano-regulated models of fracture healing (Poster)	
AWARDS	SB3C 2020, Vail, CO	July 2020
	Proximity control of callus formation in mechanoregulation models of fracture healing (Poster)	
	ORS (Orthopaedic Research Society) 2020, Phoenix, AZ	Feb 2020
	Controlling callus localization in fuzzy logic bone fracture healing models with a proximity function (Podium)	
	ORS (Orthopaedic Research Society) 2020, Phoenix, AZ	Feb 2020
	Method for image-based radiodensity profilometry to measure remodeling at the bone-callus interface in humans (Poster)	
	ORS (Orthopaedic Research Society) 2020, Phoenix, AZ	Feb 2020
	Effect of callus domain geometry on fuzzy logic bone fracture healing models (Poster)	
	ORS (Orthopaedic Research Society) 2019, Austin, TX	Feb 2019
	Controlling callus localization in fuzzy logic bone fracture healing models with a proximity function (Poster)	
AWARDS	Lehigh P.C. Rossin College of Engineering Graduate Fellowship	2022
	WRF Postdoctoral Fellowship (Finalist)	2023