

**Postdoctoral Researcher**

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

Benjamin Hall Interdisciplinary Research Building, Suite 440

CONTACT  
INFORMATION

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

[Google Scholar](#)

Mobile: +1-484-838-0359

[Linkedin](#)

SKILLS

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

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  
PROCEEDINGS

- Ren T.**, Kurt M., “Re-DiffiNet: Modeling discrepancies in tumor segmentation using diffusion models”, *Medical Imaging with Deep Learning (MIDL 2024)*.
- Rivera J., Rebala H, **Ren T.**, Kurt M., Sharma A., “Improving Glioma Segmentation in Low-Resolution Domains with Transfer Learning”, *Medical Imaging with Deep Learning (MIDL 2024)*.
- Ren T.**, Kurt M., “An Optimization Framework for Processing and Transfer Learning for the BraTS 2023 Cluster of Challenges”, *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2023)*.

PRESENTATIONS

- |   |                  |
|---|------------------|
| MIDL 2024, Paris, France  | 2024 Forthcoming |
| Re-DiffiNet: Modeling discrepancies in tumor segmentation using diffusion models (Podium)                                       |                  |
| Improving Glioma Segmentation in Low-Resolution Domains with Transfer Learning (Poster)   |                  |
| 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) |                  |
| 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

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|---|------|
| WRF Postdoctoral Fellowship (Finalist)                        | 2023 |
| Lehigh P.C. Rossin College of Engineering Graduate Fellowship | 2022 |