

# Blake E. Zimmerman

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Salt Lake City, UT  
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My career has thrived on creative problem solving within engaging, multi-disciplinary team environments. I am passionate about using applied mathematics, AI, and robotics to engage with meaningful, complex, user-driven problems.

## Relevant Employment and Education

### QBio

(Remote) Palo Alto, CA, USA

*Senior Machine Learning Engineer*

*June 2022 – October 2023*

- Delivered a HIPAA-compliant, infrastructure-as-code platform for cloud orchestration of the primary segmentation product.
- Facilitated ML lifecycle of multiple segmentation models with special attention to model efficiency.
- Produced a highlight video to communicate company strategic objectives and capabilities ([QBio LinkedIn post](#)).

*Machine Learning Engineer*

*April 2021 – June 2022*

- Developed kidney and spleen segmentation models and transitioned them to a micro-service product using PyTorch.
- Led design and implementation of generalized, reusable environment configurations for faster ML science iterations.
- Leveraged data augmentation inspired by understanding the MR image collection to increase ML performance.

### Utah Center for Advanced Imaging Research (UCAIR)

University of Utah, Salt Lake City, UT

*Postdoctoral Researcher*

*January 2021 – April 2021*

- Applying machine learning techniques to MR imaging for transcranial focused ultrasound.
- Designing and implementing novel histology workflow for quantitative MR imaging applications.
- Developing standard operating procedures for transferring histology registration procedures.

### Scientific Computing and Imaging (SCI) Institute

University of Utah, Salt Lake City, UT

*Graduate Research Assistant to Sarang C. Joshi and Allison H. Payne*

*January 2016 – January 2021*

- Utilized deep learning for segmentation to automate registration workflows.
- Worked directly with MR scanners and assisted with imaging experiments.
- Accelerated computational projects with GPU clusters and distributed Linux computing.
- Teaching assistant for biomedical engineering courses: Computational Methods; Biosystems Analysis.
- Animated and produced [video summary](#) for effective communication of image registration projects.

### Bard Access Systems

Salt Lake City, UT

*Imaging R&D Intern and Field Assurance Engineer Intern*

*May 2014 – January 2016*

- Communicated and implemented standard operating procedures and reports according to FDA standards.
- Coordinated with component suppliers and manufacturing teams to ensure product success.

## Skills

**Languages & Libraries:** Python, PyTorch, AWS Cloud Development Kit, Git, Bash, Monai, PyTorch Lightning,  $\LaTeX$ , MATLAB, Slurm, CMake, Tensorflow, C/C++

**Cloud Tooling:** Apache Airflow, Docker, AWS Batch, AWS S3, AWS IAM, AWS Lambda, Nvidia GPUs

## Education

### Ph.D. Biomedical Engineering – Medical Imaging Track

*University of Utah*

December 2020

*Salt Lake City, UT*

### B.S. Biomedical Engineering, GPA: 3.8

*University of Utah*

May 2016

*Salt Lake City, UT*

### Selected Courses:

- Mathematics of Imaging
- Image Processing
- Computational Methods
- Ultrasound
- Advanced Magnetic Resonance Imaging
- Introduction to Bioimaging
- Introduction to Optimization
- Classical Control Systems
- Medical Imaging Systems
- Introduction to Topology
- Programming for Engineers
- Proposal Writing & Presentation

## Open Source Projects

- **CAMP**

<https://github.com/blakezim/CAMP>

*Computational Anatomy and Medical Imaging using PyTorch*

- Wrote documentation for knowledge transfer to users and developers: <https://sci-camp.readthedocs.io/en/latest/>
- Contributed GPU-accelerated implementations of medical image registration algorithms.
- Wrote core techniques, including data i/o, as building blocks for other research projects.
- Implemented 3D deformable surface registration for triangular mesh objects.

## Publications:

[Google Scholar](#), [arXiv](#)

1. **Zimmerman, B. E.**, Johnson, S. L., Odéen, H. A., Shea, J. E., Winkler, N. S., Factor, R. E., Joshi, S. C., & Payne, A. H. (2021). Towards Acute, Non-contrast Assessment of Magnetic Resonance Guided Focused Ultrasound Thermal Therapies. *In Preparation*.
2. **Zimmerman, B. E.**, Johnson, S. L., Odéen, H. A., Shea, J. E., Factor, R. E., Joshi, S. C., & Payne, A. H. (2021). Histology to 3D In Vivo MR Registration for Volumetric Evaluation of MRgFUS Treatment Assessment Biomarkers. *Manuscript submitted for publication*.
3. **Zimmerman, B. E.**, Johnson, S., Odéen, H., Shea, J., Foote, M. D., Winkler, N., Sarang Joshi, & Payne, A. (2020). Learning Multiparametric Biomarkers for Assessing MR-Guided Focused Ultrasound Treatments. *IEEE Transactions on Biomedical Engineering*.
4. Johnson, S. L., **Zimmerman, B. E.**, Shea, J. E., Odéen, H. A., Winkler, N. S., , Factor, R. E., Merrill, R., Hadley, R., Joshi, S. C., & Payne, A. H. (2020). Assessment of Acute Thermal Lesions after MRgFUS Ablation with Longitudinal Volumetric MRI Registration *Manuscript submitted for publication*.
5. Foote, M. D., **Zimmerman, B. E.**, Sawant, A., & Joshi, S. C. (2019, June). Real-time 2d-3d deformable registration with deep learning and application to lung radiotherapy targeting. In *International Conference on Information Processing in Medical Imaging* (pp. 265-276). Springer, Cham.