T. Scott Trinkle

Biographical Information

Location:	Atlanta, GA
Email:	scott_trinkle@waters.com

Experience

[2] **Senior Data Scientist** — January 2022–
Waters Corporation
Milford, MA

[1] **Machine Learning Intern** — June 2021–September 2021
Waters Corporation
Milford, MA

Education

[2] **University of Chicago** — December 2021
Ph.D., Medical Physics
Thesis: "Multi-modal validation of MR microstructure imaging in the mouse brain"
Advisor: Dr. Patrick La Rivière
GPA: 3.92/4.00

[1] **University of Florida** — May 2016
B.S., Nuclear and Radiological Science, *summa cum laude*
Thesis: "Development of a Novel Tissue-Equivalent Physical Phantom for Experimental Validation of CT Dosimetry under Tube Current Modulation"
GPA: 3.92/4.00

Original Peer-Reviewed Journal Articles

[4] **Trinkle, S.**, Wildenberg, G., Kasthuri, N., La Rivière, P., Foxley, S. "Model-free analysis in the spectral domain of postmortem mouse brain EPSI reveals inconsistencies with model-based analyses of the free induction decay," *BioRxiv*, 2022, 2022.02.24.481824. https://doi.org/10.1101/2022.02.24.481824.

[3] **Trinkle, S.**, Foxley, S., Wildenberg, G., Kasthuri, N., La Rivière, P., "The role of spatial embedding in mouse brain networks constructed from diffusion tractography and tracer injections," *NeuroImage*, vol. 244, p. 118576, 2021, ISSN: 1053–8119. DOI: https://doi.org/10.1016/j.neuroimage.2021.118576.

[2] Foxley, S., Sampathkumar, V., De Andrade, V., **Trinkle, S.**, Sorokina, A., Norwood, K., LaRivière, P., Kasthuri, N., "Multi-modal imaging of a single mouse brain over five orders of magnitude of resolution," *NeuroImage*, vol. 238, p. 118250, 2021, ISSN: 1053–8119. DOI: https://doi.org/10.1016/j.neuroimage.2021.118250.

[1] **Trinkle, S.**, Foxley, S., Kasthuri, N., La Rivière, P., "Synchrotron X-ray micro-CT as a validation dataset for diffusion MRI in whole mouse brain," *Magnetic Resonance in Medicine*, vol. 86, no. 2, pp. 1067–1076, 2021. DOI: https://doi.org/10.1002/mrm.28776.

Abstracts/Presentations

[12] "A machine learning-based pipeline for background classification and data reduction in mass spectrometry imaging." — 9/2022
Trinkle S, Jones E, Chapman R.
42nd BMSS Annual Meeting, Manchester, UK.
Poster.

[11]   "MSI-Segmentation: a web-based micro-app for automated exploration   9/2022
and material segmentation of MS imaging data."
Trinkle S, Jones E, Chapman R.
42nd BMSS Annual Meeting, Manchester, UK.
Poster.

[10]   "MSI-Segmentation: a micro-app for automated exploration   8/2022
and material segmentation of mass spectrometry imaging data."
Trinkle S, Jones E, Chapman R.
Imaging Mass Spectrometry Society Summer Workshop 2022, Baltimore, MD.
Poster.

[9]   "A machine learning-based pipeline for background classification and   6/2022
data reduction in mass spectrometry imaging."
Trinkle S, Jones E, Chapman R.
70th ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN.
Poster.

[8]   "MSI-Segmentation: a web-based micro-app for automated exploration   6/2022
and material segmentation of MS imaging data."
Trinkle S, Jones E, Chapman R.
70th ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN.
Poster.

[7]   "Rapid development of predictive models and software tools for IMS research   6/2022
enabled by Saas and Low Code Computing."
Ianchis V, Gioioso M, Colley P, Vissers J, Kharit B, **Trinkle S**, Chapman R.
70th ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN.
Poster.

[6]   "Synchrotron microCT tractography connectomics: comparison with   8/2020
diffusion MRI and neural tracer injections."
Trinkle S, Foxley S, Kasthuri N, La Rivière P.
ISMRM 28$^{\text{th}}$ Annual Meeting, Paris, France.
Virtual presentation due to COVID-19 pandemic.
Received Magna Cum Laude Merit Award.
12 minute talk.

[5]   "X-ray microcomputed tomography as a natively isotropic, nondestructive,   5/2019
3D validation dataset for diffusion MRI."
Trinkle S, Foxley S, Kasthuri N, La Rivière P.
ISMRM 27$^{\text{th}}$ Annual Meeting, Montréal, QC, Canada.
Received Magna Cum Laude Merit Award.
12 minute talk.

[4]   "Towards whole-brain validation of diffusion MRI fiber-orientation   6/2018
distributions with x-ray microcomputed tomography."
Trinkle S, Foxley S, Kasthuri N, La Rivière P.
Gordon Research Conference on Image Science, Easton, MA.
Poster.

[3]   "High-resolution mapping of optical path difference using   1/2018
orientation-independent differential interference contrast microscopy"
Shribak M, Mehta S, Zuckerburg C, Rhines T, **Trinkle S**, La Rivière P
SPIE Photonics West Conference, San Francisco, CA.
Invited Talk (cancelled due to scheduling conflict).

[2]   "Quantitative analysis of temporal subtraction chest radiographs."   8/2017
Trinkle S, Engelmann R, Macmahon H, Armato S.
AAPM Annual Meeting, Denver, CO.
ePoster.

[1]	"Development of a Novel Tissue-Equivalent Physical Phantom for	3/2016

[1]   "Development of a Novel Tissue-Equivalent Physical Phantom for
Experimental Validation of CT Dosimetry under TCM"
Trinkle S, Stepusin E, Olguin E, Bolch W.
UF Undergraduate research symposium, Gainesville, FL.
Poster.   3/2016

Miscellaneous Other Presentations

[6]   "I'll show you the life of the mind! Single-neuronal predictions of others' beliefs"
Graduate Program in Medical Physics Journal Club.
30 minute talk.   2/2021

[5]   "Multi-modal validation of diffusion MRI tractography"
Graduate Program in Medical Physics Colloquium Series, Chicago, IL.
60 minute talk.   5/2020

[4]   "Head for the hills! Estimating population risk to rising sea levels"
Graduate Program in Medical Physics Journal Club.
30 minute talk.   3/2020

[3]   "Does your vote matter? Wealth and influence in American democracy."
Graduate Program in Medical Physics Journal Club.
30 minute talk.   1/2019

[2]   "Moderating risky gambling behavior"
Graduate Program in Medical Physics Journal Club.
30 minute talk.   3/2018

[1]   "Charged Particle Emission Tomography"
Graduate Program in Medical Physics Journal Club.
30 minute talk.   4/2017

Research Experience

[5]   **La Rivière Lab**, University of Chicago   7/2017–
Advisor: Dr. Patrick La Rivière
Topics: Multi-modal microstructure imaging validation

[4]   **Pan Lab**, University of Chicago   3/2017–6/2017
Advisor: Dr. Xiaochuan Pan
Topics: Dual-energy CT

[3]   **Center for EPR Imaging in Vivo Physiology**,
University of Chicago   1/2017–3/2017
Advisor: Dr. Howard Halpern
Topics: EPR Imaging, dose profile validation

[2]   **Armato Lab**, University of Chicago   9/2016–12/2016
Advisor: Dr. Sam Armato
Topics: Computer-aided diagnosis, temporal subtraction radiography

[1]   **Advanced Laboratory for Radiation Dosimetry Studies**,
University of Florida   1/2013–5/2016
Advisor: Dr. Wesley Bolch
Topics: Physical phantom construction, computational dosimetry

Funding Awards

[1] Principal Investigator: T. Scott Trinkle
Title: *A novel multi-modal, multi-scale imaging pipeline for the validation of diffusion MRI of the brain.*
Source: NIH National Research Service Award (F31)
Project period: 7/1/2019–12/31/2021
Total direct costs: $120,979
Project role: Contact PI (100% effort)

Teaching activity

[4] **Introduction to Medical Physics**, University of Chicago   2020
Teaching Assistant
Topics: Medical imaging, Image Processing, Radiation therapy
Rating: 5.0/5.0 from 12 students
Received 4 nominations for Iguana Award for Teaching Assistants

[3] **Supervised undergraduate Independent Study**   2019–2020
Chineze Egwudo
Topic: Tractography parameter optimization

[2] **Medical Imaging 1**, University of Chicago   2018
Teaching Assistant
Topics: X-ray imaging, MRI, image restoration
Rating: 5.0/5.0 from 4 students

[1] **Mathematics For Medical Physics**, University of Chicago   2017
Teaching Assistant
Topics: Linear systems theory, stochastic processes, image reconstruction
Rating: 4.8/5.0 from 6 students

Relevant coursework

[3] **Machine Learning for Healthcare**, Massachusetts Institute of Technology Short Programs   2022
Topics: Risk stratification, clinical NLP, treatment selection, causal inference, survival modeling

[2] **Introduction to Machine Learning**, Toyota Institute of Technology   2019
Topics: Experimental design, regression, feature selection, SVM, random forests, gradient boosting, deep learning, CNN

[1] **Mathematics for Medical Physics**, University of Chicago   2016
Topics: Optimization, stochastic processes, estimation theory, ROC analysis, linear algebra, non-Gaussian noise models

Leadership Roles

[1] **Student Co-President**
Graduate Program in Medical Physics, University of Chicago   2018–2019

Awards and Honors

[13]	UChicago Graduate Program in Medical Physics Best Thesis Award	$500	2022
[12]	Figure chosen as August issue cover for Magnetic Resonance in Medicine	-	2021
[11]	Magna Cum Laude oral session award, ISMRM, "Synchrotron microCT tractography connectomics: comparison with diffusion MRI and neural tracer injections"	-	2020
[10]	Magna Cum Laude oral session award, ISMRM, "X-ray microcomputed tomography as a natively isotropic, nondestructive, 3D validation dataset for diffusion MRI."	-	2019

[9]	ISMRM Trainee Stipend	$565	2019
[8]	University Scholars Program Award	$1750	2016
[7]	N.L. Griesheimer Memorial Scholarship Recipient	$300	2015
[6]	Roberto Pagano Memorial Scholarship Recipient	$2000	2015
[5]	Bryan Scholarship Recipient	$1000	2015
[4]	Anderson Scholar Award	-	2014
[3]	Wunsch Scholarship Recipient	$1000	2014
[2]	Jacobs Scholarship Recipient	$225	2013
[1]	Rice Family Scholarship Recipient	$325	2013

Professional Associations

[6]	The American Society for Mass Spectrometry (ASMS)	2022–
[5]	The International Society for Magnetic Resonance in Medicine (ISMRM)	2018–2021
[4]	The International Society for Optics and Photonics (SPIE)	2017–2021
[3]	The American Association of Physicists in Medicine (AAPM)	2016–2018
[2]	Health Physics Society (HPS)	2015–2016
[1]	American Nuclear Society (ANS)	2012–2016

Computing

Top Language:	Python
Competent:	MATLAB, Bash
Familiar:	SQL, R, C++, html
Visualization:	Matplotlib, Bokeh, Photoshop, ImageJ
Machine learning:	Scikit-learn, Keras, PyTorch, TensorFlow
Other tools:	GNU Emacs, LaTeX, git, Docker, AWS