

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

- [17] “MSI Quantify: A micro-app for the automated processing of quantitative mass spectrometry data.” 6/2023
Trinkle S, Jones E, Towers M, Chapman R, Claude E.
71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX.
Poster.

- [16] “Automated visualization, exploration and material segmentation of ion-mobility mass spectrometry imaging data.” 6/2023
Trinkle S, Gangal A, Mather J, Shrestha B, Chapman R.
 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX.
 Poster.
- [15] “An automated workflow for combining, aligning, exploring, and visualizing 3D MS imaging data.” 6/2023
 Chapman R, **Trinkle S**, Jones E.
 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX.
 Poster.
- [14] “An automated computational pipeline for retention time alignment across LC systems.” 6/2023
 Reah I, **Trinkle S**, Marchand R, Preston C, Morns I, Chapman R, Fitch P.
 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX.
 Poster.
- [13] “DESI imaging at the cellular level through the application of nano-flow and multi-focus approaches.” 6/2023
 Jones E, Hoyes E, **Trinkle S**, Chapman R.
 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX.
 17 minute talk.
- [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 and material segmentation of MS imaging data.” 9/2022
Trinkle S, Jones E, Chapman R.
 42nd BMSS Annual Meeting, Manchester, UK.
 Poster.
- [10] “MSI-Segmentation: a micro-app for automated exploration and material segmentation of mass spectrometry imaging data.” 8/2022
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 data reduction in mass spectrometry imaging.” 6/2022
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 and material segmentation of MS imaging data.” 6/2022
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 enabled by SaaS and Low Code Computing.” 6/2022
 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 diffusion MRI and neural tracer injections.” 8/2020
Trinkle S, Foxley S, Kasthuri N, La Rivière P.
 ISMRM 28th 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, 3D validation dataset for diffusion MRI.” 5/2019
Trinkle S, Foxley S, Kasthuri N, La Rivière P.
 ISMRM 27th Annual Meeting, Montréal, QC, Canada.
Received Magna Cum Laude Merit Award.
 12 minute talk.
- [4] “Towards whole-brain validation of diffusion MRI fiber-orientation distributions with x-ray microcomputed tomography.” 6/2018
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 orientation-independent differential interference contrast microscopy” 1/2018
 Shribak M, Mehta S, Zuckenburg 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 Experimental Validation of CT Dosimetry under TCM” 3/2016
Trinkle S, Stepusin E, Olguin E, Bolch W.
 UF Undergraduate research symposium, Gainesville, FL.
 Poster.

Miscellaneous Other Presentations

- [6] “I’ll show you the life of the mind! Single-neuronal predictions of others’ beliefs” 2/2021
 Graduate Program in Medical Physics Journal Club.
 30 minute talk.
- [5] “Multi-modal validation of diffusion MRI tractography” 5/2020
 Graduate Program in Medical Physics Colloquium Series, Chicago, IL.
 60 minute talk.
- [4] “Head for the hills! Estimating population risk to rising sea levels” 3/2020
 Graduate Program in Medical Physics Journal Club.
 30 minute talk.
- [3] “Does your vote matter? Wealth and influence in American democracy.” 1/2019
 Graduate Program in Medical Physics Journal Club.
 30 minute talk.
- [2] “Moderating risky gambling behavior” 3/2018
 Graduate Program in Medical Physics Journal Club.
 30 minute talk.
- [1] “Charged Particle Emission Tomography” 4/2017
 Graduate Program in Medical Physics Journal Club.
 30 minute talk.
-

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 and supervision activity

- [6] **Internship supervisor** 2023
Akshay Khanna
Topic: Lab methods predictor and analytics platform
- [5] **Internship supervisor** 2022–2023
Ayushe Gangal
Topic: Ion-mobility mass spectrometry imaging, multi-modal registration
- [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] **Undergraduate independent study supervisor** 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

[4]	Applied Data Science Program , Massachusetts Institute of Technology Short Programs Topics: Data visualization, deep learning, recommendation systems, time series analysis	2022
[3]	Machine Learning for Healthcare , Massachusetts Institute of Technology Short Programs Topics: Risk stratification, clinical NLP, treatment selection, causal inference, survival modeling	2022
[2]	Introduction to Machine Learning , Toyota Institute of Technology Topics: Experimental design, regression, feature selection, SVM, random forests, gradient boosting, deep learning, CNN	2019
[1]	Mathematics for Medical Physics , University of Chicago Topics: Optimization, stochastic processes, estimation theory, ROC analysis, linear algebra, non-Gaussian noise models	2016

Leadership Roles

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

Awards and Honors

[14]	Waters Global Hackathon Most Innovative, Honorable Mention Award	-	2022
[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, L ^A T _E X, git, Docker, AWS