# T. Scott Trinkle

### **Biographical Information**

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

#### Experience

Senior Data Scientist [2]Waters Corporation Milford, MA

[1]Machine Learning Intern Waters Corporation Milford, MA

### Education

- University of Chicago December 2021 [2]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
- University of Florida [1]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**

- Trinkle, S., Wildenberg, G., Kasthuri, N., La Rivière, P., Foxley, S. "Model-free analysis in the spectral [4]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.
- Trinkle, S., Foxley, S., Wildenberg, G., Kasthuri, N., La Rivière, P., "The role of spatial embedding in [3]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

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

June 2021–September 2021

May 2016

[16]	"Automated visualization, exploration and material segmentation of ion-mobility mass spectrometry imaging data." <b>Trinkle S</b> , Gangal A, Mather J, Shrestha B, Chapman R. 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX. Poster.	6/2023
[15]	"An automated workflow for combining, aligning, exploring, and visualizing 3D MS imaging data." Chapman R, <b>Trinkle S</b> , Jones E. 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX. Poster.	6/2023
[14]	"An automated computational pipeline for retention time alignment across LC systems." Reah I, <b>Trinkle S</b> , Marchand R, Preston C, Morns I, Chapman R, Fitch P. 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX. Poster.	6/2023
[13]	"DESI imaging at the cellular level through the application of nano-flow and multi-focus approaches." Jones E, Hoyes E, <b>Trinkle S</b> , Chapman R. 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX. 17 minute talk.	6/2023
[12]	"A machine learning-based pipeline for background classification and data reduction in mass spectrometry imaging." <b>Trinkle S</b> , Jones E, Chapman R. 42nd BMSS Annual Meeting, Manchester, UK. Poster.	9/2022
[11]	"MSI-Segmentation: a web-based micro-app for automated exploration and material segmentation of MS imaging data." <b>Trinkle S</b> , Jones E, Chapman R. 42nd BMSS Annual Meeting, Manchester, UK. Poster.	9/2022
[10]	"MSI-Segmentation: a micro-app for automated exploration and material segmentation of mass spectrometry imaging data." <b>Trinkle S</b> , Jones E, Chapman R. Imaging Mass Spectrometry Society Summer Workshop 2022, Baltimore, MD. Poster.	8/2022
[9]	<ul> <li>"A machine learning-based pipeline for background classification and data reduction in mass spectrometry imaging."</li> <li>Trinkle S, Jones E, Chapman R.</li> <li>70th ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN.</li> <li>Poster.</li> </ul>	6/2022
[8]	"MSI-Segmentation: a web-based micro-app for automated exploration and material segmentation of MS imaging data." <b>Trinkle S</b> , Jones E, Chapman R. 70th ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN. Poster.	6/2022
[7]	"Rapid development of predictive models and software tools for IMS research enabled by Saas and Low Code Computing." Ianchis V, Gioioso M, Colley P, Vissers J, Kharit B, <b>Trinkle S</b> , Chapman R. 70th ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN. Poster.	6/2022

[6]	<ul> <li>"Synchrotron microCT tractography connectomics: comparison with diffusion MRI and neural tracer injections."</li> <li>Trinkle S, Foxley S, Kasthuri N, La Rivière P. ISMRM 28<sup>th</sup> Annual Meeting, Paris, France.</li> <li>Virtual presentation due to COVID-19 pandemic.</li> <li>Received Magna Cum Laude Merit Award.</li> <li>12 minute talk.</li> </ul>	8/2020	
[5]	<ul> <li>"X-ray microcomputed tomography as a natively isotropic, nondestructive, 3D validation dataset for diffusion MRI."</li> <li>Trinkle S, Foxley S, Kasthuri N, La Rivière P.</li> <li>ISMRM 27<sup>th</sup> Annual Meeting, Montréal, QC, Canada.</li> <li><i>Received Magna Cum Laude Merit Award.</i></li> <li>12 minute talk.</li> </ul>	5/2019	
[4]	"Towards whole-brain validation of diffusion MRI fiber-orientation distributions with x-ray microcomputed tomography." <b>Trinkle S</b> , Foxley S, Kasthuri N, La Rivière P. Gordon Research Conference on Image Science, Easton, MA. Poster.	6/2018	
[3]	"High-resolution mapping of optical path difference using orientation-independent differential interference contrast microscopy" Shribak M, Mehta S, Zuckerburg C, Rhines T, <b>Trinkle S</b> , La Rivière P SPIE Photonics West Conference, San Francisco, CA. Invited Talk (cancelled due to scheduling conflict).	1/2018	
[2]	"Quantitative analysis of temporal subtraction chest radiographs." <b>Trinkle S</b> , Engelmann R, Macmahon H, Armato S. AAPM Annual Meeting, Denver, CO. ePoster.	8/2017	
[1]	"Development of a Novel Tissue-Equivalent Physical Phantom for Experimental Validation of CT Dosimetry under TCM" <b>Trinkle S</b> , Stepusin E, Olguin E, Bolch W. UF Undergraduate research symposium, Gainesville, FL. Poster.	uivalent Physical Phantom for 3/2016 metry under TCM" olch W. ium, Gainesville, FL.	
Re	search Experience		
[5]	<b>La Rivière Lab</b> , University of Chicago Advisor: Dr. Patrick La Rivière Topics: Multi-modal microstructure imaging validation	7/2017-	
[4]	<b>Pan Lab</b> , University of Chicago Advisor: Dr. Xiaochuan Pan Topics: Dual-energy CT	3/2017 - 6/2017	
[3]	<b>Center for EPR Imaging in Vivo Physiology</b> , University of Chicago Advisor: Dr. Howard Halpern Topics: EPR Imaging, dose profile validation	1/2017-3/2017	
[2]	<b>Armato Lab</b> , University of Chicago Advisor: Dr. Sam Armato Topics: Computer-aided diagnosis, temporal subtraction radiography	9/2016-12/2016	
[1]	Advanced Laboratory for Radiation Dosimetry Studies, University of Florida Advisor: Dr. Wesley Bolch Topics: Physical phantom construction, computational dosimetry	1/2013-5/2016	

## Funding Awards

[1]	<ul> <li>Principal Investigator: T. Scott Trinkle</li> <li>Title: A novel multi-modal, multi-scale imaging pipeline for the validation of diff</li> <li>Source: NIH National Research Service Award (F31)</li> <li>Project period: 7/1/2019–12/31/2021</li> <li>Total direct costs: \$120,979</li> <li>Project role: Contact PI (100% effort)</li> </ul>	fusion MRI of the brain.
Tea	aching and supervision activity	
[6]	<b>Internship supervisor</b> Akshay Khanna Topic: Lab methods predictor and analytics platform	2023
[5]	<b>Internship supervisor</b> Ayushe Gangal Topic: Ion-mobility mass spectrometry imaging, multi-modal registration	2022-2023
[4]	Introduction to Medical Physics, University of Chicago 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	2020
[3]	<b>Undergraduate independent study supervisor</b> Chineze Egwudo Topic: Tractography parameter optimization	2019-2020
[2]	Medical Imaging 1, University of Chicago Teaching Assistant Topics: X-ray imaging, MRI, image restoration Rating: 5.0/5.0 from 4 students	2018
[1]	Mathematics For Medical Physics, University of Chicago Teaching Assistant Topics: Linear systems theory, stochastic processes, image reconstruction Rating: 4.8/5.0 from 6 students	2017

### Relevant coursework

[7]	Graph Algorithms and Machine Learning, Massachusetts Institute of Technology Short Programs	2023
[6]	Advanced Reinforcement Learning, Massachusetts Institute of Technology Short Programs	2023
[5]	Reinforcement Learning, Massachusetts Institute of Technology Short Programs	2023
[4]	<b>Applied Data Science Program</b> , 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]	<b>Introduction to Machine Learning</b> , Toyota Institute of Technology Topics: Experimental design, regression, feature selection, SVM, random forests, gradient boosting, learning, CNN	2019 deep
[1]	Mathematics for Medical Physics, University of Chicago Topics: Optimization, stochastic processes, estimation theory, ROC analysis, linear algebra, non-Gau noise models	2016 ssian

# Leadership Roles

[1]	<b>Student Co-President</b> Graduate Program in Medical Physics, University of Chicago		2018-2019
Aw	vards and Honors		
[14]	Waters Global Hackathon Most Innovative, Honorable Mention Award	-	2022

[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	-	2021
	Magnetic Resonance in Medicine		
[11]	Magna Cum Laude oral session award, ISMRM,	-	2020
	"Synchrotron microCT tractography connectomics:		
	comparison with diffusion MRI and neural tracer injections"		
[10]	Magna Cum Laude oral session award, ISMRM,	-	2019
	"X-ray microcomputed tomography as a natively isotropic,		
	nondestructive, 3D validation dataset for diffusion MRI."		
[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**

The American Society for Mass Spectrometry (ASMS)	2022 -
The International Society for Magnetic Resonance in Medicine (ISMRM)	2018-2021
The International Society for Optics and Photonics (SPIE)	2017 - 2021
The American Association of Physicists in Medicine (AAPM)	2016-2018
Health Physics Society (HPS)	2015-2016
American Nuclear Society (ANS)	2012-2016
F	The American Society for Mass Spectrometry (ASMS) The International Society for Magnetic Resonance in Medicine (ISMRM) The International Society for Optics and Photonics (SPIE) The American Association of Physicists in Medicine (AAPM) Health Physics Society (HPS) American Nuclear Society (ANS)

# 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, $\mathbb{IAT}_{EX}$ , git, Docker, AWS