

## ABOUT

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I am currently an AI Scientist at HHMI Janelia Research Campus, where I am part of the AI@HHMI initiative. I received my Ph.D. in computer science from Harvard University, advised by Hanspeter Pfister. I am broadly interested in applied machine learning and data visualization, particularly in their applications to neuroscience. Specifically, my research focuses on building representation learning approaches and scalable interactive visual analysis tools to analyze the hidden architecture of the brain.

## EDUCATION

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### Harvard University

Ph.D. in Computer Science, Advisor: Prof. Hanspeter Pfister

Cambridge, MA

2021–2025

- Focus: Applied ML, Data Visualization, Connectomics
- Thesis: Scaling Computational Connectomics

### TU Wien

M.Sc. & B.Sc (with Honors) in Computer Science, Advisor: Prof. Eduard Gröller

Vienna, Austria

2015–2021

- Focus: Biomedical Imaging, Computer Vision, Data Visualization
- GPA: 1.1/1.0

## EXPERIENCE

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### HHMI Janelia Research Campus

AI Scientist, AI@HHMI Initiative

Ashburn, VA

01/2026 - present

- Foundational Datasets and Models for Spatial Biology

### E11 Bio

Machine Learning Fellow

Alemeda, CA

04/2025 - 08/2025

- Learning Automated Error Correction in Connectomics

### HHMI Janelia Research Campus

Visiting Researcher with Dr. Srinivas Turaga

Ashburn, VA

05/2024 - 12/2025

- Building Generative Models of Neuronal Morphology

### King Abdullah University of Science & Technology (KAUST)

Research Intern with Prof. Markus Hadwiger

Thuwal, Saudi Arabia

02/2019 - 05/2019

- Observer Relative Flow Visualization in Curved Spaces
- Co-authored a publication which won the SciVis Best Paper Award at IEEE VIS 2020

### Brainlab AG

Research Intern

Munich, Germany

08/2018 - 01/2019

- Path Tracing for Realtime 3D Medical Visualization
- Mixed Reality for 3D Medical Visualization

- [1] S. Dorkenwald, C. M. Schneider-Mizell, D. Brittain, A. Halageri, C. Jordan, N. Kemnitz, M. A. Castro, W. Silversmith, J. Maitin-Shephard, **J., Troidl**, et al., “[CAVE: Connectome Annotation Versioning Engine](#)”, *Nature Methods*, 2025.
- [2] **J. Troidl**, Y. Liang, J. Beyer, M. Tavakoli, J. Danzl, M. Hadwiger, H. Pfister, and J. Tompkin, “[niiv: Interactive Self-supervised Neural Implicit Isotropic Volume Reconstruction](#)”, *to appear at MICCAI Workshop on Efficient Medical AI*, 2025.
- [3] S. Prabhakaran, C. Yapp, G. J. Baker, J. Beyer, Y. H. Chang, A. L. Creason, R. Krueger, J. Muhlich, N. H. Patterson, K. Sidak, D. Sudar, A. J. Taylor, L. Ternes, **J., Troidl**, Y. Xie, A. Sokolov, D. R. Tyson, and the Cell Imaging Hackathon Participants, “[Addressing persistent challenges in digital image analysis of cancer tissue: Resources developed from a hackathon](#)”, *Molecular Oncology*, pp. 2025–02, 2025.
- [4] M. Shewarega\*, **J. Troidl\***, O. Alvarado Rodriguez, M. Dindoost, P. Harth, H. Haberkern, J. Stegmaier, D. Bader, and H. Pfister, “[MoMo: Combining Neuron Morphology and Connectivity for Interactive Motif Analysis in Connectomes](#)”, *IEEE Transactions on Visualization and Computer Graphics*, \*indicates equal contribution, 2025.
- [5] A. Shapson-Coe, M. Januszewski, D. R. Berger, A. Pope, Y. Wu, T. Blakely, R. L. Schalek, P. H. Li, S. Wang, J. Maitin-Shepard, N. Karlupia, S. Dorkenwald, E. Sjostedt, L. Leavitt, D. Lee, **J. Troidl**, F. Collman, L. Bailey, A. Fitzmaurice, R. Kar, B. Field, H. Wu, J. Wagner-Carena, D. Aley, J. Lau, Z. Lin, D. Wei, H. Pfister, A. Peleg, V. Jain, and J. W. Lichtman, “[A petavoxel fragment of human cerebral cortex reconstructed at nanoscale resolution](#)”, *Science*, vol. 384, no. 6696, 2024.
- [6] S. Warchol, **J. Troidl**, J. L. Muhlich, R. Krueger, J. Hoffer, T. Lin, J. Beyer, E. Glassman, P. K. Sorger, and H. Pfister, “[psudo: Exploring Multi-Channel Biomedical Image Data with Spatially and Perceptually Optimized Pseudocoloring](#)”, *Computer Graphics Forum (Proceedings Eurographics/IEEE Symposium on Visualization, Eurovis 2024)*, vol. 43, no. 3, 2024.
- [7] Z. Chen, C. Zhang, Q. Wang, **J. Troidl**, S. Warchol, J. Beyer, N. Gehlenborg, and H. Pfister, “[Beyond Generating Code: Evaluating GPT on a Data Visualization Course](#)”, *IEEE VIS Workshop on Visualization Education, Literacy, and Activities*, 2023.
- [8] P. Harth, A. Bast, **J., Troidl**, B. Meulemeester, H. Pfister, J. Beyer, M. Oberlaender, H.-C. Hege, and D. Baum, “[Rapid Prototyping for Coordinated Views of Multi-scale Spatial and Abstract Data: A Grammar-based Approach](#)”, in *Eurographics Workshop on Visual Computing for Biology and Medicine (VCBM)*, 2023.
- [9] **J. Troidl**, S. Warchol, J. Choi, J. Matelsky, N. Dhanyasi, X. W. Wang, B. Wester, D. Wei, J. Lichtman, H. Pfister, and J. Beyer, “[Vimo: Visual Analysis of Neuronal Connectivity Motifs](#)”, *IEEE Transactions on Visualization and Computer Graphics*, 2023.
- [10] P. Velicky, E. Miguel, J. M. Michalska, J. Lyudchik, D. Wei, Z. Lin, J. F. Watson, **J., Troidl**, J. Beyer, Y. Ben-Simon, et al., “[Dense 4D nanoscale reconstruction of living brain tissue](#)”, *Nature Methods*, pp. 1–10, 2023.
- [11] J. Beyer\*, **J. Troidl\***, S. Boorboor, M. Hadwiger, A. Kaufman, and H. Pfister, “[A Survey of Visualization and Analysis in High-Resolution Connectomics](#)”, in *Computer Graphics Forum*, vol. 41, 2022, \*indicates equal contribution.
- [12] **J. Troidl**, C. Cali, E. Gröller, H. Pfister, M. Hadwiger, and J. Beyer, “[Barrio: Customizable Spatial Neighborhood Analysis and Comparison for Nanoscale Brain Structures](#)”, *Computer Graphics Forum (Proceedings Eurographics/IEEE Symposium on Visualization, Eurovis 2022)*, vol. 41, no. 3, 2022.

- [13] P. Rautek, M. Mlejnek, J. Beyer, **J. Troidl**, H. Pfister, T. Theußl, and M. Hadwiger, “Objective Observer-Relative Flow Visualization in Curved Spaces for Unsteady 2D Geophysical Flows”, *IEEE Transactions on Visualization and Computer Graphics*, 2020.

## PREPRINTS

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- [1] **J. Troidl**, J. Knittel, W. Li, F. Zhan, H. Pfister\*, and S. Turaga\*, “Global Neuron Shape Reasoning with Point Affinity Transformers”, Preprint, 2025, \*indicates equal contribution.
- [2] M. D. Petkova, M. Januszewski, T. Blakely, K. J. Herrera, G. F. Schuhknecht, R. Tiller, J. Choi, R. L. Schalek, J. Boulanger-Weil, A. Peleg, Y. Wu, S. Wang, **J. Troidl**, S. K. Vohra, D. Wei, et al., “A connectomic resource for neural cataloging and circuit dissection of the larval zebrafish brain”, Preprint, 2025, pp. 2025–06.

## TEACHING

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- **(Head) Teaching Fellow** (for Extension School Students) at Harvard University Fall 2022, 2023, 2024  
*CS171 - Visualization*
- **Teaching Fellow** for Professional & Executive Education at Harvard University 2023, 2024  
*Data Visualization: Communicating Data and Complex Ideas Visually*
- **Teaching Fellow** at TU Wien 2017 - 2020  
*Medical Visualization, Intro to Visual Computing, Intro to Computer Engineering*

## SCHOLARSHIPS AND AWARDS

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- ILW Best Master Thesis Award in informatics for life sciences, German Informatics Society and German Association for Medical Informatics, Biometry and Epidemiology. 2022
- Best SciVis Paper, IEEE VIS 2020 (among the best 3 papers out of 211 accepted papers) 2020
- Scholarship, Austrian Marshall Plan Foundation 2020
- Bachelor with Honors, TU Wien (among the top 5% of CS students at TU Wien) 2020
- Short-term grant for scientific work abroad, TU Wien 2020
- Merit Based Scholarship, TU Wien 2018