

ABOUT

I am a Ph.D. candidate in computer science at Harvard University, advised by Hanspeter Pfister. I am broadly interested in data visualization and applied machine learning, especially with applications in computational neuroscience. Specifically, my research focuses on building scalable interactive visual analysis tools and representation learning approaches to analyze the hidden architecture of the brain.

EDUCATION

Harvard University Ph.D. in Computer Science, Advisor: Prof. Hanspeter Pfister – Focus: Data Visualization, Applied ML, Computational Neuroscience	Cambridge, MA 2021–2027
TU Wien M.Sc. & B.Sc (with Honors) in Computer Science, Advisor: Prof. Eduard Gröller – Focus: Data Visualization, Biomedical Imaging, Computer Vision – GPA: 1.1/1.0	Vienna, Austria 2015–2021

EXPERIENCE

HHMI Janelia Visiting Researcher with Dr. Srinivas Turaga – Building Generative Models of Neuronal Morphology	Ashburn, VA 05/2024 - present
Harvard University Research Assistant with Prof. Hanspeter Pfister – Visualization of Large-Scale Biomedical Data – Towards Efficient and Scalable Analysis Tools for Connectomics	Cambridge, MA 09/2021 - present
King Abdullah University of Science & Technology (KAUST) Research Intern with Prof. Markus Hadwiger – Observer Relative Flow Visualization in Curved Spaces – Co-authored a publication which won the SciVis Best Paper Award at IEEE VIS 2020	Thuwal, Saudi Arabia 02/2019 - 05/2019
Brainlab AG Research Intern – Path Tracing for Realtime 3D Medical Visualization – Mixed Reality for 3D Medical Visualization	Munich, Germany 08/2018 - 01/2019

PEER REVIEWED PUBLICATIONS

- [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](#)”, to appear in *Nature Methods*, vol. 384, no. 6696, 2024.

- [2] 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](#)”, to appear in *Molecular Oncology*, pp. 2024–07, 2024.
- [3] 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.
- [4] 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.
- [5] 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.
- [6] 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.
- [7] **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.
- [8] 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.
- [9] 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*, Wiley Online Library, vol. 41, 2022, *indicates equal contribution.
- [10] **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.
- [11] 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

- [1] **J. Troidl**, J. Knittel, W. Li, F. Zhan, H. Pfister*, and S. Turaga*, “[Global Neuron Shape Reasoning with Point Affinity Transformers](#)”, Preprint, 2024.
- [2] **J. Troidl**, Y. Liang, J. Beyer, M. Tavakoli, J. Danzl, M. Hadwiger, H. Pfister, and J. Tompkin, “[niiv: Fast Self-supervised Neural Implicit Isotropic Volume Reconstruction](#)”, Preprint, 2024, pp. 2024–09.

TEACHING

- **(Head) Teaching Fellow** (for Extension School Students) at Harvard University
CS171 - Visualization Fall 2022, 2023, 2024
- **Teaching Fellow** for Professional & Executive Education at Harvard University
Data Visualization: Communicating Data and Complex Ideas Visually 2023, 2024
- **Teaching Fellow** at TU Wien
Selected Chapters from Medical Visualization Fall 2020
- **Teaching Fellow** at TU Wien
Introduction to Visual Computing Spring 2017, 2018
- **Teaching Fellow** at TU Wien
Introduction to Computer Engineering Fall 2017

SCHOLARSHIPS AND AWARDS

- 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 (9.100\$) 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 (3.100\$) 2020
- Merit Based Scholarship, TU Wien (1.000\$) 2018

TALKS

- **Analyzing Intelligence with Human-Centered Computing** at TU Wien, Austria
Seminar Talk Summer 2024
- **Neural Implicit Isotropic Volume Reconstruction** at IST Austria
Seminar Talk Summer 2024
- **Motif Analysis in Connectomes** at KAUST, Saudi Arabia
Seminar Talk Spring 2023
- **The State of the Art in Neural Rendering** at Harvard University
Seminar Talk Spring 2023
- **The State of the Art in Connectome Visualization** in Rome, Italy
Conference Presentation at EuroVis Summer 2022
- **Visual Neuronal Motif Analysis in Connectomes** in Berlin, Germany
Poster Presentation at the International Connectomics Conference Summer 2022

REFERENCES

- **Hanspeter Pfister**, An Wang Professor of Computer Science, Harvard University
pfister@g.harvard.edu
- **James Tompkin**, Associate Professor, Brown University
james_tompkin@brown.edu
- **Srinivas Turaga**, Group Leader, HHMI Janelia
turagas@janelia.hhmi.org