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Eric Wait

Education

2019 **Ph.D. in Electrical and Computer Engineering**, *Drexel University*, Philadelphia, PA
The Complete Interactome with 5-D GPU Accelerated Analysis, Visualization, and User Interface for Biological Microscopy Applications.

2012 **M.S. in Computer Science**, *University of Wisconsin*, Milwaukee, WI
Visualization and Correction of Automated Segmentation, Tracking, and Lineaging in Stem Cell Line Aging from Stem Cell Image Sequences.

2010 **B.S. in Computer Science**, *University of Wisconsin*, Milwaukee, WI

Work Experiences

2021-Present **Principal Data Scientist**, *Elephas*, Madison, WI
Lead data scientist at a cancer-focused startup applying advanced microscopy for tissue-based therapy profiling.
- Led a cross-functional team (biologists, engineers, operators) and directed development of real-time multimodal microscope control software with GPU-accelerated processing (CUDA, ITK).
- Designed and implemented de novo segmentation pipelines and visualization workflows to analyze and communicate multidimensional microscopy data across FLIM, multi-photon, and dOCT.
- Stepped into product strategy roles during company growth—authored product vision documents, guided feature development, and delivered compelling visual stories using custom and commercial renderers.

2017-2021 **Data Scientist**, *Howard Hughes Medical Institute, Janelia Research Campus*, Ashburn, VA, Advanced Imaging Center
Process data collected on state-of-the-art microscopes by visiting scientists from all around the world.
- Collaborated with top researchers with a variety of biological samples ranging from organelles to whole organism.
- Extended existing software solutions to meet analysis needs.
- Created de novo software solutions in visualization, preprocessing, and analytics.

2015-2019 **High Performance Computing Consultant**, *Winter Wait Consulting LLC*, Sterling, VA
Consulted for a private global conglomerate in running optimization solutions using high performace computation.
- Managed junior coding staff.
- Advised senior leaders of appropriate solution stack for optimization problems.
- Worked closely with mathematicians to solve transportation problems to optimality, using group theory.

1998-2019 **Command Post Superintendent**, *Air National Guard*, Minneapolis, MN
Ensured communication between local senior leadership and higher headquarters during wartime senarios and humanitarian efforts. Coordinated and tracked troop and equipment movement.
- Supervised and trained six military members in Command and Control duties to ensure total force survivability.
- Created a training and education tracking system that was implemented force wide.
- Designed a streamlined procedure for disseminating classified information to commanders during wartime.

2012-2017 **Research Assistant**, *Drexel University*, Philadelphia, PA, Dr. Andrew Cohen's lab

2011-2012 **Research Assistant**, *University of Wisconsin*, Milwaukee, WI, Dr. Andrew Cohen's lab

2010-2011 **Project Assistant**, *University of Wisconsin*, Milwaukee, WI, Dr. Andrew Cohen's lab

Professional Skills

Languages Python, C/C++/C#, MATLAB, Mathematica, JAVA, LISP, Perl, SQL, CUDA, DirectX, OpenGL

Tools Jupyter Notebooks, Visual Studio, VSCode, Git, Subversion, Blender, Adobe Creative Suite

Hardware Building and maintaining workstations and servers, RAID arrays, network attached storage, multi-CPU builds, multi-GPU builds, redundant systems, monitor arrays, stereoscopic displays

Service

2020-Present **Review Editor**, *Frontiers in Bioinformatics*

2020-2021 **DEI Committee Member**, *HHMI President's Office*

2020-2021 **Journal Reviewer**, *Molecular Biology of the Cell*

2019-2020 **Webinar Coordinator and Technical Support**, *Imaging Africa*

2019 **Journal Reviewer**, *Communications Biology*

2018-Present **Crisis Action Team Advisor**, *Janelia Research Campus*

2017 **Journal Reviewer**, *Bioimage Bioinformatics*

Patents

2019 Cohen, A., Dion, G., Winter, M., **Wait, E.**, Koerner, M., *Finger-worn Device with Compliant Textile Regions*, US 10,466,784

Cohen, A., Dion, G., Winter, M., **Wait, E.**, Koerner, M., *Wearable Devices, Wearable Robotic Devices, Gloves, and Systems, Methods, and Computer Program Products Interacting with the Same*, US 10,248,200

2016 Bailey, T., Colletti, B., **Wait, E.**, King, A., Gandhi, B., *Parallel Processing for Solution Space Partitions*, US 20160335568A1

Honors

2015 **Koerner Family Fellowship**, *Drexel University*, Philadelphia, PA

2014 **Meritorious Service Medal**, *United States Air Force*, Minneapolis, MN
Highest peacetime award given to senior non-commissioned officers.

2012 **Academic Excellence Award**, *University of Wisconsin*, Milwaukee, WI

2009 **1st Place Virginia Burke Writing Contest**, *University of Wisconsin*, Milwaukee, WI
Open Source Software: can software change the world?

Invited Talks

2020 **Speaking Quanitativly: Effectivly communicating your research**, *Inaugural Pair-up Meeting for Black American Biologists*

2019 **Quantifying Cellular "Dynamics": A conversation between Biologists and a Data Scientist**, *Syracuse University*

2017 **GPU Processing and Visual Validation of Lattice Lightsheet Data (with bonus 3D Kymographs)**, *Janelia Research Campus*

2015 **Collaborative Visualization in the Browser for Segmentation, Tracking, and Lineaging with 5-D Biological Microscopy Images**, *Bioinformatics Conference*

Normalized Covariance Image Stitching Technique for Rigid Registration of Microscope Tiles, *Bioinformatics Conference*

2014 **Visualization and Correction of Automated Segmentation, Tracking and Lineaging from 5-D Stem Cell Image Sequences**, *4th Symposium on Biological Data Visualization*, Boston, MA

Communal Stereoscopic Visualization of 5-D Flouresence Images with Segmentation Embedded, *Neural Stem Cell Institute*, Albany, NY

Select Publications (full list at https://ericwait.com/pubs)

2024 Liu C., Smith J., Wang Y., Ouellette J., Rogers J., Oliner J., Szulczewski M., **Wait E.**, Brown W., Wax A., Eliceiri K., Rafter J., Assessing cell viability with dynamic optical coherence microscopy, ***Biomedical Optics Express***

Sinclair R., Wang M., Jawaid M.Z., Longkumer T., Aaron J., Rossetti B., **Wait E.**, McDonald K., Cox D., Heddleston J., and others, Four-dimensional quantitative analysis of cell plate development in Arabidopsis using lattice light sheet microscopy identifies robust transition points between growth phases, ***Journal of Experimental Botany***

2023 Sinclair R., Wang M., Jawaid Z., Wong S., Cox D., Heddleston J., **Wait E.**, Aaron J., Wilkop T., Drakakaki G., Spatiotemporal dynamics of cell plate development during plant cytokinesis, ***Molecular Biology of the Cell***

2022 Hari-Gupta Y., Fili N., Dos Santos Á., Cook A.W., Gough R.E., Reed H.C.W., Wang L., Aaron J., Venit T., **Wait E.**, and others, Myosin VI regulates the spatial organisation of mammalian transcription initiation, ***Nature Communications***

Dos Santos Á., Fili N., Hari-Gupta Y., Gough R.E., Wang L., Martin-Fernandez M., Aaron J., **Wait E.**, Chew T.-L., Toseland C.P., Binding partners regulate unfolding of myosin VI to activate the molecular motor, ***Biochemical Journal***

2021 Moore A., Coscia S., Simpson C., Ortega F., **Wait E.**, Heddleston J, Nirschl J, Obara C, Guedes-Dias P, Boecker C, Chew T, Theriot J, Lippincott-Schwartz J, Holzbaur E, Actin cables and comet tails organize mitochondrial networks in mitosis, ***Nature*** doi:10/1002020

Zhao X., Wang Y., **Wait, E.**, Mankowski, W., Bjornsson C., Cohen A., Zuloaga K., Temple S., 3D image analysis of the complete ventricular-subventricular zone stem cell niche reveals significant vasculature changes and progenitor deficits in males versus females with aging, ***Stem Cell Reports*** doi:10.1016/j.stemcr.2021.03.012

2020 **Wait, E.**, Reiche, M., Chew, T., "Hypothesis-Driven Quantitative Fluorescence Microscopy: The Importance of Reverse-thinking in Experimental Design", ***Journal of Cell Science*** doi:10.1242/jcs.250027

Pfisterer, K., Levitt, J., Lawson, C., Marsh, R., Heddleston, J., **Wait, E.** Ameer-Beg, S., Cox, S., Parsons, M., "FMNL2 Regulates Dynamics of Fascin in Filopodia", ***Journal of Cell Biology*** doi:10.1083/jcb.201906111

2019 **Wait, E.**, Winter, M., Cohen, A., "Hydra Image Processor: 5-D GPU Image Analysis Library with Matlab and Python Wrappers", ***Bioinformatics*** doi:10.1093/bioinformatics/btz523

Aaron, J., **Wait, E.**, DeSantis, M., Chew, T., "Practical Considerations in Particle and Object Tracking and Analysis", ***Current Protocols in Cell Biology*** doi:10.1002/cpcb.88

Winter, M., Mankowski, W., and **Wait, E.**, De La Hoz, E., Aguinaldo, A., Cohen, A., "Separating Touching Cells Using Pixel Replicated Elliptical Shape Models", ***IEEE Transactions on Medical Imaging*** doi:10.1109/tmi.2018.2874104

2017 Valm, A., Cohen, S., Legant, W., Melunis, J., Hershberg, U., **Wait, E.**, Cohen, A., Davidson, M., Betzig, E., Lippincott-Schwartz, J., "Applying Systems-level Spectral Imaging and Analysis to Reveal the Organelle Interactome", ***Nature*** doi:10.1038/nature22369

2016 Caino, M., Seo, J., Aguinaldo, A., **Wait, E.**, Bryant, K., Kossenkov, A., Hayden, J., Vaira, V., Morotti, A., Ferrero, S., Bosari, S., Gabrilovich, D., Languino, L., Cohen, A., Altieri, D., "A Neuronal Network of Mitochondrial Dynamics Regulates Metastasis", ***Nature Communications*** doi:10.1038/ncomms13730

2014 **Wait, E.**, Winter, M., Bjornsson, C., Kokovay, E., Wang, Y., Goderie, S., Temple, S., Cohen, A., "Visualization and Correction of Automated Segmentation, Tracking and Lineaging from 5-D Stem Cell Image Sequences", ***BMC Bioinformatics*** doi:10.1186/1471-2105-15-328

2011 Winter, M., **Wait, E.**, Roysam, B., Goderie, Susan K., Ali, R., Kokovay, E., Temple, S., Cohen, A., "Vertebrate Neural Stem Cell Segmentation, Tracking and Lineaging with Validation and Editing.", ***Nature Protocols*** doi:10.1038/nprot.2011.422