

Eric Wait, PhD

Professional Summary

Principal Data Scientist combining technical depth with human-centered leadership. Built and led teams across academic research (HHMI Janelia), startup environments (Elephas Biosciences), and 21 years of military service, developing expertise in cross-functional collaboration, mentorship, and strategic alignment. Translates complex technical capabilities into accessible guidance for diverse stakeholders while delivering GPU-accelerated pipelines, ML/AI solutions, and production systems. Approaches challenges with curiosity and strategic thinking, balancing optimization with knowing when to pivot for greater impact.

Leadership & Collaboration

- Collaboration** Advised 170+ international scientists annually on experimental design and data collection strategies, building relationships across cultural, linguistic, and time-zone differences to maximize scientific impact within critical 2-week experimental windows.
- Coordinated across biology, engineering, and computational teams to translate research needs into technical solutions, bridging domain expertise gaps to deliver cohesive outcomes.
- Managed blended teams of full-time employees and contractors, adapting motivation and communication strategies to diverse working relationships and business constraints.
- Communication** Communicated directly with senior leadership – base commanders and Pentagon officials – in mission-critical scenarios, delivering clear, actionable information under high-pressure conditions.
- Bridged strategy and execution by translating business objectives into technical roadmaps, ensuring daily work remained aligned with long-term company vision.
- Mentorship** Trained and mentored personnel in high-stakes environments, instilling composure and judgment needed to make real-time decisions under pressure.
- Led software development team through novel microscopy system integration, providing technical mentorship while balancing performance goals with cost and timeline constraints.
- Strategy** Connect organizational objectives to tactical solutions by understanding the "why" behind challenges, identifying optimal approaches, whether internal development, delegation, or external partnerships.
- Multiplied impact through delegation and mentorship, recognizing when to leverage team strengths over individual technical execution.
- Team Dynamics** Applied empathy, active listening, and conflict resolution to build high-functioning, diverse teams across military, academic, and startup environments.

Professional Skills

Extensive experience applying machine-level programming, GPU acceleration, hardware integration, and modern development workflows to advanced imaging modalities and scientific analysis environments.

- Languages** C, C++, C#, Python, MATLAB, SQL, CUDA, DirectX, OpenGL, Mathematica, Java, LISP, Perl
- Data Systems** SQL databases, distributed computing (OpenMP, cluster scheduling), machine learning (clustering, classification, SVM), deep learning (YOLO, neural networks), statistical analysis (hypothesis testing, Bayesian), real-time streaming, data quality frameworks

DevOps	Git, CMake, Docker, AWS (EC2), Azure (compute, pipelines), GitHub Actions, CI/CD workflows, Conda, vcpkg, NuGet
Tools	VSCode, Visual Studio, Jupyter, Jira, Emacs/Vi, Azure DevOps, Copilot, ChatGPT, Claude
Hardware	Embedded systems, custom workstation/server builds, RAID/NAS systems, multi-CPU/GPU setups, redundant architectures, advanced and stereoscopic display arrays
Vis & Design	Blender, Figma, VTK, Photoshop, Premiere, Illustrator, Imaris, Dragonfly, visual pipeline planning

Work Experiences

2021–2025 **Principal Data Scientist**, *Elephas Biosciences*, Madison, WI

Architected GPU-accelerated data acquisition and processing for real-time analysis; led cross-functional teams to deliver high-performance solutions integrating hardware control, signal processing, and analytical workflows.

- Applied GPU-accelerated image processing and device control systems to fluorescence and bright-field microscopy workflows; enabled multi-site reproducibility in oncology research.
- Developed and deployed analysis pipelines integrating ML classifiers for biomarker detection, increasing diagnostic confidence in live-tissue imaging experiments.
- Directed cross-functional teams spanning biology, engineering, and software, translating research needs into robust technical solutions adopted across multiple lab sites.
- Instituted validation workflows ensuring reproducibility, regulatory alignment, and stakeholder consensus.
- Collaborated with marketing and finance teams to align technical work with strategic goals.
- Developed training programs ensuring consistent data collection practices.
- Brought financial and strategic awareness to technical decision-making.

2017–2021 **Data Scientist**, **Advanced Imaging Center**, *HHMI, Janelia Research Campus*, Ashburn, VA

Applied GPU optimization and signal processing to massive time-lapse datasets; built scalable processing infrastructure spanning laptops to HPC clusters.

- Applied DirectX and CUDA pipelines to fluorescence and multiphoton microscopy data, enabling high-fidelity visualization and preprocessing for large-scale biological studies.
- Developed feature extraction and tracking workflows for terabyte-scale datasets, improving robustness and accuracy of biological interpretations.
- Guided international scientists through experimental design and data collection within critical timelines.
- Bridged biology, engineering, and computational expertise to deliver integrated solutions.
- Provided constructive feedback on visitor proposals to align expectations with capabilities.

2015–2019 **High Performance Computing Consultant**, *Winter Wait Consulting LLC*, Sterling, VA

Developed and deployed optimized solvers for large-scale transportation problems; trained teams across technical and strategic domains.

- Applied C, C++ and Python optimization routines to transportation network models, enabling faster scenario analyses and improved decision-making for real-world logistics challenges.
- Collaborated with mathematicians to integrate novel algorithmic approaches, improving solution accuracy and applicability in operational research contexts.
- Advised senior leadership on solution architecture and HPC resource allocation for global logistics modeling.
- Mentored developers in solver design, memory management, and tuning for distributed systems.

1998–2019 **Command Post Superintendent**, *Air National Guard*, Minneapolis, MN

Held **Top Secret** clearance. Led mission-critical communications and personnel training in high-pressure operational environments spanning 21 years of service.

- Orchestrated real-time information flow across command post sections during operations, coordinating between stakeholders with diverse priorities to ensure mission success.
- Communicated directly with base commanders and Pentagon officials in high-pressure scenarios, delivering clear, actionable intelligence and operational updates.
- Trained and mentored teams of personnel in high-stakes decision-making, instilling composure and judgment needed for real-time operations under pressure.
- Facilitated coordination between organizational sections, surfacing critical information to leadership and ensuring alignment across complex operational requirements.

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

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

Education

- 2019 **Ph.D. in Electrical and Computer Engineering**, *Drexel University*, Philadelphia, PA
Dissertation: *5D GPU Accelerated Analysis, Visualization, and UI for Biological Microscopy Applications*.
Developed signal-processing and feature extraction algorithms in C, C++, CUDA, DirectX, MATLAB, and Python to analyze large-scale microscopy datasets; enhanced workflows for accurate, reproducible biological image interpretation.
- 2012 **M.S. in Computer Science**, *University of Wisconsin*, Milwaukee, WI
Thesis: *Visualization and Correction of Auto-Segmentation, Tracking, and Lineage of Stem Cells from Images*.
Applied low-level algorithms in C, C++ and MATLAB for multidimensional image analysis; improved UI tools for manual correction and validation of segmentation/tracking results.
- 2010 **B.S. in Computer Science**, *University of Wisconsin*, Milwaukee, WI

Patents

- 2019 Cohen, A., Dion, G., Winter, M., **Wait, E.**, Koerner, M., *Finger-worn Device with Compliant Textile Regions*, US 10,466,784; *Wearable Robotic Devices*, US 10,248,200
- 2016 Bailey, T., Colletti, B., **Wait, E.**, King, A., Gandhi, B., *Parallel Processing for Solution Space Partitions*, US 20160335568A1

Publications

Technical publications demonstrating expertise in GPU acceleration, real-time data processing, and high-performance computing systems. Full list of 25+ pubs at <https://ericwait.com/pubs>

- 2024 Liu C. et al., **Wait E.**, *Assessing cell viability with dynamic optical coherence microscopy*, ***Biomedical Optics Express***
- 2023 Sinclair R. et al., **Wait E.**, *Spatiotemporal dynamics of cell plate development during plant cytokinesis*, ***Molecular Biology of the Cell***
- 2021 Moore A. et al., **Wait E.**, *Actin cables organize mitochondrial networks in mitosis*, ***Nature***
Zhao X. et al., **Wait E.**, *3D image analysis of the ventricular-sub-ventricular zone stem cell niche*, ***Stem Cell Reports***
- 2020 **Wait E.**, Reiche M., Chew T., *Hypothesis-driven quantitative fluorescence microscopy*, ***JCS***
- 2019 **Wait E.**, Winter M., Cohen A., *Hydra Image Processor: 5-D GPU image analysis library with MATLAB/Python wrappers*, ***Bioinformatics***
Aaron J. et al., **Wait E.**, *Practical considerations in particle and object tracking and analysis*, ***Current Protocols in Cell Biology***
Winter M. et al., **Wait E.**, *Separating touching cells using pixel-replicated elliptical shape models*, ***IEEE Transactions on Medical Imaging***
- 2017 Valm A. et al., **Wait E.**, *Systems-level spectral imaging to reveal the organelle interactome*, ***Nature***
- 2014 **Wait E. et al.**, *Visualization and correction of automated segmentation, tracking, and lineaging in 5-D stem cell image sequences*, ***BMC Bioinformatics***
- 2011 Winter M. et al., **Wait E.**, *Vertebrate neural stem cell segmentation, tracking, and lineaging with validation/editing*, ***Nature Protocols***

Awards & Honors

- 2015 **Koerner Family Fellowship**, *Drexel University*, Philadelphia, PA
- 2014 & 2019 **Meritorious Service Medal**, *United States Air Force*, Minneapolis, MN
Highest peacetime award given to senior non-commissioned officers.
- 2020-2021 **Review Editor**, *Frontiers in Bioinformatics*
- 2020-2021 **DEI Committee Member**, *HHMI President's Office*
- 2019-2020 **Webinar Coordinator and Technical Support**, *Imaging Africa*
- 2018-2021 **Crisis Action Team Advisor**, *Janelia Research Campus*