Matthew B. Jacobsen   Berwyn Heights, MD | mattjac@umd.edu | 860-917-4725

Personal Website | LinkedIn | Github

Skills

Graduate student with expertise in neuromorphic event cameras, visual tracking, and action recognition. Current research considers fast retina-inspired action classification and visual tracking algorithms for event cameras based on representations found in the human hippocampus. Extensive prior experience in developing and deploying scalable service infrastructure and customer-facing applications.

Education

- M.S. Neuroscience and Cognitive Science, University of Maryland, 2025
- B.S. Cognitive Science, University of Connecticut, 2011.
- B.S. Computer Science, University of Connecticut, 2011.

Publications

- Jacobsen Matthew, et al. "Patterns of life in temporal data: indexing and hashing for fast and relevant data retrieval" *SPIE Defense+ Security*. International Society for Optics and Photonics, 2014.
- Levchuk, Georgiy, Matthew Jackobsen, and Brian Riordan. "Detecting misinformation and knowledge conflicts in relational data." *SPIE Defense+ Security*. International Society for Optics and Photonics, 2014.
- Levchuk, Georgiy, et al. "Learning and detecting coordinated multi-entity activities from persistent surveillance." *SPIE Defense, Security, and Sensing*. International Society for Optics and Photonics, 2013.

Work Experience

PhD Student   **August 2022 - Present**

Neuroscience and Cognitive Science, University of Maryland   College Park, MD

Advisors: Yiannis Aloimonos and Cornelia Fermüller   Perception and Robotics Group

- Developing retina-inspired action classification and visual tracking algorithms for use with event cameras.
- Investigating hippocampal-inspired representations for object discrimination.
- Presented poster at Society for Neuroscience 2023 for an orientation-convolutional layer with shared weights across space and orientation to reduce network size to predict neural activity from visual stimuli.

Sabbatical   **January 2021 - August 2022**

Software Development Engineer   **July 2017- January 2021**

Global Logistics Technology, Amazon.com   Boston, MA

- Designed, implemented, and launched multiple backend services to support international parcel and freight shipping.
- Led and contributed to design reviews for services in global logistics technology.
- Reviewed colleagues' code and software designs on a continuous basis.
- Supported running services through on-call, operational reviews, and scaling in preparation for increased load.

Software Development Engineer   **June 2014 - July 2017**

Android, Audible Inc.

Boston, MA

- Developed Android applications with a focus on maintainability and testability.
- Worked with product managers and UX designers to define product requirements, implement, and test for production-use.
- Worked on end-to-end client architecture from underlying data models to front-end UX.
- Reviewed colleagues' code and software designs on a continuous basis.

Research Engineer

May 2014 - June 2014

Associate Research Engineer

September 2011 - May 2014

Analytics Modeling and Simulation Division, Aptima Inc.

Woburn, MA

- Proposed and developed innovative software solutions in the areas of graph analysis, computer vision, and natural language processing.
- Improved data processing pipelines and developed tools for data visualization for projects throughout the company.
- Led a small team to research and prototype a method for multiple object tracking in wide area motion imagery. Won company outstanding achievement award for our work.
- Managed project to detect conflicting information in unstructured text data. Created experimental dataset and developed data import and aggregation workflow. Team presented our findings at SPIE.

Intern

June 2011 – September 2011

Analytics Modeling and Simulation Division, Aptima Inc.

Woburn, MA

- Created training data and ran experiments for entity behavior classification in wide-area motion imagery.

Research Assistant

June 2010 – August 2011

Emily Myer's Lab, University of Connecticut

Storrs, CT

- Used multivariate pattern classification to search for neural correlates of speech perception in MATLAB.
- Researched subjects' perception of accented speech.
- Built a lab website and a content management system to enable easy editing on a LAMP stack.

Web Design Intern

June 2009 – January 2010

Green Arrow Interactive

Willimantic, CT

- Built web pages for client companies using HTML, PHP and MySQL.
- Converted Photoshop designs to usable HTML and CSS.