

Ramy Mounir

RESEARCHER · THOUSAND BRAINS PROJECT

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Summary

An artificial intelligence researcher on the Thousand Brains Project, where we build neuroscience-inspired intelligent machines by reverse engineering the neocortex. My research focuses on the learning principles of the brain and the mechanisms underlying perception, reasoning, and prediction.

Research Interests: Computer Vision, Hierarchical Representation Learning, Computational Neuroscience, and Cognitive Psychology.

Education

University of South Florida

PhD, Computer Science and Engineering

Tampa, FL

2024

- Advisor: Dr. Sudeep Sarkar
- Research: Cognitive models, Self-supervised Representation Learning, Streaming datasets
- GPA: 4.0

University of South Florida

M.Sc, Mechanical Engineering

Tampa, FL

2018

- Advisor: Dr. Redwan Alqasemi
- Co-Advisor: Dr. Rajiv Dubey
- Research: Assistive technology, autonomous navigation, Brain computer interface
- GPA: 4.0

University of South Florida

B.Sc, Mechanical Engineering

Tampa, FL

2015

- Dean's list - All semesters
- Summa Cum Laude
- GPA: 3.96

Book Chapters

Self-supervised Event Segmentation, Ramy Mounir, Sathyanarayanan N. Aakur and Sudeep Sarkar. Advanced Methods and Deep Learning in Computer Vision (Ch.12), *Elsevier 2021*, ISBN: 9780128221099 [Chapter]

Publications

Predictive Attractor Models, Ramy Mounir, and Sudeep Sarkar. (*NeurIPS'24*) [paper] [website] [code]

STREAMER: Streaming Representation Learning and Event Segmentation in a Hierarchical Manner, Ramy Mounir, Sujal Vijayaraghavan and Sudeep Sarkar. (*NeurIPS'23*) [paper] [website] [code / docs]

Long-term Monitoring of Bird Flocks in the Wild, Kshitiz, Sonu Shreshtha, Ramy Mounir, Mayank Vatsa, Richa Singh, Saket Anand, Sudeep Sarkar, Severam Mali Parihar. (*IJCAI'23*) [paper] [website] [code]

Towards Automated Ethogramming: Cognitively-Inspired Event Segmentation for Streaming Wildlife Video Monitoring, Ramy Mounir, Ahmed Shahabaz, Roman Gula, Jörn Theuerkauf and Sudeep Sarkar. (*IJCV (CV4Animals@CVPR'22)*) [paper] [website] [dataset] [code / docs]

Time-Series Analysis of Video Graphs Using Joint Kalman Smoothing and Registration, Aditi Bal, Ramy Mounir, Sathyanarayanan Aakur, Sudeep Sarkar and Anuj Srivastava. (*ECCV'22 Oral*) [Paper] [website] [Video]

Spatio-Temporal Event Segmentation and Localization for Wildlife Extended Videos, Ramy Mounir, Roman Gula, Jörn Theuerkauf and Sudeep Sarkar. (*CVIP'21 (CV4Animals@CVPR'21 Oral)*) [Paper] [website] [Video]

BCI-Controlled Hands-Free Wheelchair Navigation with Obstacle Avoidance, Ramy Mounir, Redwan Alqasemi, and Rajiv Dubey. (*IROS'18 workshop Oral*) [Paper] [website] [Video]

Speech Assistance for Persons With Speech Impediments Using Artificial Neural Networks, Ramy Mounir, Redwan Alqasemi, and Rajiv Dubey. (*ISG'18 (ASME IMECE'17 Oral)*) [Paper] [website] [Slides]

Professional Experience

2025-Now AI Researcher, Thousand Brains Project

2024-2024 Research Intern, Numenta

2023-2023 Computer Vision Research Intern, Mitsubishi Electric Research Labs (MERL)

2016-2024 Graduate Research and Teaching Assistant, Computer Science, USF

2014-2017 R&D engineer, EarthLinked Technologies, Inc.

Datasets

Bus Stop Tracking

<https://ramymounir.com/publications/BayesianTracking/>

2022

- 9000 Frames annotated with bounding box for over 25 actors
- Ids of actors are consistent across frames to be used for tracking evaluation
- The dataset features occlusions, partial and reappearing detections
- Video extracted from the Meva dataset

Kagu Wildlife Monitoring

<https://datadryad.org/stash/dataset/doi:10.5061/dryad.kh18932bb>

2021

- Ten days of continuous streaming of the Kagu bird various environmental and lighting conditions
- 23 million frames annotated with spatial bounding box
- 5 events annotated temporally (e.g., walk in/out, nest building, feeding)
- Annotations for various environmental and time-of-day conditions (e.g., shadows, sunrise, sunset, etc.)

Awards & Certificates

2024	Dissertation Completion Fellowship, USF	\$10,000
2022	Outstanding Reviewer award, ECCV'22	
2022	Highlighted Reviewer award, ICLR'22	
2018	Robotics Graduate Certificate, USF	
2017	Early Innovation Award , Intel Corporation	\$5,300
2016	Engineer in Training/ FE Mechanical , NCEES	
2015	Outstanding Graduate Award , University of South Florida	
2015	Certified LabVIEW Associate Developer , National Instruments	
2014	Certified Solidworks Associate (CSWA) , Dassault Systèmes	

Reviewer

2025	ICLR ,
2024	CVPR, NeurIPS, ECCV, ICLR, ICML, WACV ,
2023	CVPR, TPAMI, ICCV, ICML, NeurIPS, WACV, IEEE RA-L ,
2022	CVPR, ECCV, NeurIPS, ICLR, WACV, IEEE RA-L, ACMMM ,
2021	CLVision@CVPR, ACMMM ,

Blog Articles

2021 [Distributed Data Parallel with Slurm, Submitit & PyTorch](#),

Medium

Invited Talks

Fall 2023. "Streaming Representation Learning and Event Segmentation in a Hierarchical Manner", [Numenta](#)

Spring 2023. "Event Segmentation for Wildlife Monitoring", [CV grad class, USF](#)

Fall 2021. "Self-Supervised Representation Learning", [AI+X Seminar, USF](#)

References available upon request.