Aditya Upadhyayula

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Education

2021	**Johns Hopkins University, USA**, PhD, Psychological & Brain Sciences
2018	**Johns Hopkins University, USA**,M.A, Psychological & Brain Sciences
2016	**North Carolina State University, USA**, M.S, Electrical & Computer Engineering
2013	**Birla Institute of Technology & Science - Hyderabad, India**, M.Sc.(Hons.), Physics
2013	**Birla Institute of Technology & Science - Hyderabad, India**, B.E.(Hons.), Electronics & Communications Engineering

Academic Appointments

present	**Post Doctoral Scholar, Department of Psychological & Brain Sciences, Washington University, St. Louis, MO**
July 2023	Investigating how we represent, process and remember naturalistic videos using eye tracking, fMRI, computational modelling and behavioral analyses
	Mentor(s) : Jeffrey M. Zacks, PhD & Zachariah M. Reagh, PhD
July 2023	**Post Doctoral Scholar, Center for Mind & Brain, University of California, Davis, CA**
July 2021	Investigating how scene semantics informs eye movements in naturalistic images and videos using eye tracking, computational modelling and behavioral analyses
	Mentor : John Henderson, PhD

Honors and Awards

2021	G. Stanley Hall Scholar Award - Awarded to a student who has demonstrated exceptional scholarly progress in dissertation research ($500)
2019	Travel Award, Object Perception Attention and Memory conference ($250)
2019	Departmental Collaborative Research Grant Award ($1000)
2016	Robert S. Waldrop Graduate Student Fellowship
-2021	

Skills

Programming	**Python**, **Matlab**, **R**, **C**, Javascript, HTML, Java
Methodology	**Computational Cognitive Science**, **functional Magnetic Resonance Imaging (fMRI)**, **Eye Tracking**, **Psychophysics**, EEG processing
OS	MacOS, Linux, Windows
Software	**PyTorch**, **Psychopy**, **Psychtoolbox**, **Nilearn**, **Plotly**, Tensorflow, Experiment Builder, EEGLAB, Eyelink systems, NLTK, spaCy

Teaching

Spring 2020	Instructor - Cognitive Neuroscience, Johns Hopkins University
Fall 2019	Instructor - Research Methods, Johns Hopkins University
Spring 2019	Instructor - Design & Experimental Analysis, Johns Hopkins University
Fall 2018	Teaching Assistant - Sensation & Perception, Johns Hopkins University
Spring 2018	Teaching Assistant - Introduction to Cognitive Psychology, Johns Hopkins University
Fall 2017	Teaching Assistant - Introduction to Psychology, Johns Hopkins University

Research Experience

Present — **Visiting Researcher, Tilburg University, Netherlands**
August 2019 — Developing computational methods using psycholinguistic theories to understand narrative comprehension in comics

Collaborator : Neil Cohn, PhD

May 2021 — **Graduate Researcher, Johns Hopkins University, Baltimore, MD**
August 2016 — Developed computational methods, used psychophysics tools & eye tracking to understand performance limits in visual cognition & perception

Advisor : Jonathan Flombaum, PhD

May 2016 — **Graduate Researcher, North Carolina University, Raleigh, NC**
January 2015 — Developed computational methods using signal & image processing to remove respiratory artifacts in MRI scans

Mentor : David Lalush, PhD

May 2016 — **Graduate Research Assistant, University of North Carolina, Chapel Hill, NC**
January 2016 — Built an EEG processing pipeline & analyzed for frontal asymmetries in the resting state EEG data of patients with Major Depressive Disorder

Mentor : Flavio Frohlich, PhD

December 2014 — **Research Assistant, Indian Institute of Science, Bengaluru, India**
August 2014 — Programmed & Assisted in building a robotic arm to study motor control of eye-hand coordination in humans

Mentor : Aditya Murthy, PhD

July 2014 — **Research Assistant, Indian Institute of Science, Bengaluru, India**
January 2013 — Developed prototypes & wrote algorithms for an autonomous Indoor Positioning System that can be used for navigating first responders during disaster management

Mentor : K.V.S. Hari, PhD

Publications (including manuscripts in prep & under review)

2024 — **Upadhyayula A.**., John M. Henderson, Jeffrey M. Zacks & Zachariah M. Reagh. (*In prep*). Intersubject neural similarity and pattern reinstatement during recall are enhanced at meaningful moments during film viewing.

2024 — **Upadhyayula A.**footnote [1]., Alan Lu [1] & John M Henderson. (In prep) Meaning maps predict reaction time in change blindness paradigm

2024 — **Upadhyayula A.**., & John M Henderson. (In prep). Event structure affects impaired detection of spatiotemporal disruptions during film viewing

2024 — **Upadhyayula A.**., Ian B. Phillips & Flombaum. J.I. (In prep). Subjective expansion of Time happens in our immediate memory, but not perceptual experience [See the poster]

2024 — **Upadhyayula A.**., & Neil Cohn. (*Under Revision*). A hierarchical grammar explains segmentation in visual narratives. [Watch the talk]

2023 — **Upadhyayula A.**., & John M Henderson. (*In press*) Spatiotemporal jump detections during continuous film viewing : Insights from a flicker paradigm.

2023 — **Upadhyayula A.**., & John M Henderson. (*JOV*) Spatiotemporal jump detections during continuous film viewing

2023 — **Upadhyayula A.**., Ian B. Phillips & Flombaum. J.I. (*JEP:General*). Eccentricity advances arrival into visual perception [Watch the talk]

2020 — **Upadhyayula A.**., & Flombaum. J.I. (2020). "A model that adopts human fixations explains individual differences in multiple object tracking." Cognition (2020) : 104418.g [link]

1. Equal contribution.

Conferences

2023 Alan Lu, **Upadhyayula A.** ,& John M. Henderson. Meaning maps predict reaction time in change blindness paradigm, presented at Object Perception & Memory (OPAM) 2023.

2022 **Upadhyayula A.** ,& John M. Henderson. Time marches on : Impaired detection of spatiotemporal discontinuities during film viewing, poster presented at VSS 2022.

2020 **Upadhyayula A.** ,& Neil Cohn. Hierarchical Structure in Processing Visual Narratives : A computational investigation, talk presented part of symposium at CogSci. 2020

2020 **Upadhyayula A.**, Ian Phillips & Flombaum. J.I. Space and Time Dissociate in the construction of the Visual Now, talk presented at V-VSS 2020

2020 Ian Phillips, **Upadhyayula A.** & Flombaum. J.I. Tachyspychia - subjective expansion of time - happens in immediate memory, and not in perceptual experience, poster presented at V-VSS 2020

2019 **Upadhyayula A.**, & Jonathan Flombaum, "Distortions of time perception", presented at Mid Atlantic Memory and Attention conference

2019 **Upadhyayula, A.**, & Jonathan Flombaum, Two distortions of perceived space and time, presented at Object Perception Attention & Memory (OPAM)

2019 **Upadhyayula A.**, & Jonathan Flombaum, The Visual Now across the visual field, presented at Captial Area Cognition Action & Perception

2018 **Upadhyayula A.**, & Jonathan Flombaum, "Object size affects multiple object tracking performance (but not via frequency of close encounters)." Journal of Vision 18.10 (2018) : 1020-1020

Selected Talks

2023 Barnett Lab, University of Toronto, PI : Alex Barnett

2023 Encounters with semantic violations do not interfere with immediately subsequent scene-viewing behavior, presented at Psychonomics 2023, on behalf of Alan Lu due to unforseen circumstances

2023 Event & Memory cognition group at Washington University in St. Louis - (PIs : Jeffrey M. Zacks, Zachariah M. Reagh)

2023 Isik Lab, Johns Hopkins - (PI : Leyla Isik)

2023 Abstract Representations in Neural Architectures (ARENA) group, Germany - (PIs : Melissa Vo, Maria Toneva, Christian Feibach, Gemma Roig, Matthias Kaschube)

2021 Yale University, CT - Cognitive & Neural Computation Lab (PI : Ilker Yildirim)

2021 University of California, Davis, CA - Visual Cognition Group (PI : John Henderson)

2021 New York University - Ma Lab (PI : Weiji Ma)

2020 Tilburg University, Netherlands - Groningen-Tilburg joint workshop on Pictorial narrative comprehension

2020 University of California, San Diego, CA - Cognitive tools lab (PI : Judith Fan)

2019 Villanova University, PA - Mid Atlantic meeting on Memory & Action

2018 Georgetown University, DC - Captiol Area conference on Cognition, Action & Perception

2018 Johns Hopkins University - Seminar on Computational Psycholinguistics (PI : Tal Linzen)

Professional Activities

Membership Vision Sciences Society, Cognitive Neuroscience Society, Cognitive Sciences Society, Psychonomics, OPAM

Ad Hoc Reviewing Cognitive Science; Psychological Review; Attention, Perception & Psychophysics; Visual Cognition; Memory & Cognition; Journal of Experimental Psychology : Learning, Memory & Cognition; Timing & Time perception; Memory & Cognition

References

Jonathan Flombaum
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