

Amin Hashemi

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Educational Record

Sept. 2019- PhD in Cognitive Science

Sept. 2023 University of Barcelona, Barcelona, Spain

Supervisor: Elisabet Tubau (etubau@ub.edu)

Thesis title: Spatial structures in Analogical Reasoning

Excellent Cum Laude

Sept. 2018. MSc in Behavior and Cognition

Sept. 2019 University of Barcelona

Sept. 2012. MSc in Philosophy of Science

Jan. 2015 Sharif University of Technology, Tehran, Iran

Thesis title: Model-based Reasoning in Science

BSc in Electronics

Sharif University of Technology

Research Experience

Apr. 2025- Postdoctoral Fellow, Faculty of Psychology and Education, University of Tehran, Iran

This research aims to elucidate the role of spatial structures in learning by integrating behavioral experiments, eye-tracking explorations, and functional neuroimaging. It focuses on a newly discovered aspect of memory, learning, and thinking: using cognitive maps in organizing knowledge. While, in recent years, there have been a wide range of investigations published about the process of building and utilizing cognitive maps in higher order activities, there has been no systematic research investigating the global structures of the built cognitive maps. This research can be a starting point shedding light on how humans use their spatial abilities in complex ways to memorize, learn, and think, even in apparently non-spatial contexts.

Jan. 2022- Research Fellow, Virtual Reality lab, Institute of Neuroscience, University of Barcelona

July. 2024 Coordinator: Joan Lopez-Molinar (j.lopezmoliner@ub.edu)

- Performing different VR experiments
- Transforming and analyzing VR data
- Creating a machine learning predictor using eye data to predict the amount of cyber sickness symptoms

Jan. 2020- Research Assistant, VISCA lab, Institute of Neuroscience, University of Barcelona

Dec. 2021 Principal investigator: Hans Super (hans.super@icrea.cat)

- Created and implemented a machine learning classifier using eye data to diagnose Alzheimer/ MCI
- Transformed and analyzed eye data to study eye vergence and eye synchrony patterns in ASD/ADHD
- Transformed and analyzed EEG data

Selected Publications

Hashemi, A, & Tubau, E., The Effect of Spatial Structures on Analogical Reasoning. *Memory & Cognition* (2025): 1-12

Hashemi, A, & Tubau, E., Global Relations versus Object relations in Visual Analogies. *Thinking and Reasoning* 31.1(2025), 109-135

Hashemi, A, & Super, H. etc., Classification of MCI Patients Using Vergence Eye Movements and Pupil Responses Obtained During a Simple and Short Attention Test. *Journal of Aging and Health Research* 3.1 (2023): 100-121

Jimenez, E., Hashemi, A, & Super, H. etc etc., Altered Vergence Eye Movements and Pupil Response of Patients with Alzheimer's Disease and Mild Cognitive Impairment During an Oddball Task. *Journal of Alzheimer's disease* 82.1 (2021) 421-433

Selected Conferences and Seminars

Hashemi, A, Global Relations versus Object Relations in Visual Analogies. European Society for Cognitive Psychology -ESCOP (2023), Portugal

Hashemi, A & Tubau, E., Global relations versus object relations in visual analogies. I Jornada de Recerca (2023), Spain

Hashemi, A, Spatial Structures in Analogical Problem Solving. UB VISCA Seminar (2023), Spain

Teaching experiences

Psychology of Learning (University of Tehran; bachelor -2025)

IT (University of Tehran; bachelor -2026)

Statistics (University of Science and Culture; master -2026)

Social pathology (Mehr-e-Alborz; bachelor -2025)

Outside academy experiences

Sept 2024- Principal founder and product owner

Aasaa (www.aasaa.app), Tehran, Iran

Aasaa is a mobile and web application dedicated to mental health. It is basically gathering daily data about the mental health of a user and provide relevant and personalized contents, created by the Aasaa group. Integrating the artificial intelligence and mental health, we used advanced techniques in data analysis and data science to get insight from the data in order to make reports for the users and also recommend mental health contents.

Jan 2022- Lead Data Scientist

July 2024 Braingaze (www.braingaze.com), Barcelona, Spain

- Created and implemented a machine learning classifier using eye data to diagnose Alzheimer/ MCI
- Created and implemented a machine learning classifier using eye data to diagnose ADHD/ASD

Data Analyst

Regus (www.regus.es), Barcelona, Spain

- Consolidated and analyzed data from multiple sources
- Created, implemented, and back-tested predictive models using Python environment
- Created automated BI dashboards

Data Scientist

Achareh, Tehran, Iran

- Created a machine learning ensemble model that predicts freight transportation price
- Transformed intuitive qualitative models into quantized predictive one, and used them as one part of the ensemble model
- Built and optimized clustering algorithms for customer segmentation in marketing industry

Math specialist

Farzanegan, Tehran, Iran

- Designed and taught 'Logic and Strategy' course for high school students
- Taught courses of Informatics Olympiad: combinatorics, algorithms, and graph theory

Skills

Programming languages: Python (advanced), R, Matlab, SPSS

Laboratory skills: Eye tracker (advanced), VR (advanced), EEG, fMRI

Platforms: Qualtrics, Psychopy, Porsline

Languages: Persian (native), English (fluent), Spanish (advanced)

Outreach

Honored PhD researcher at UB (2023)

Member of Iran's National Elite foundation (Bonyad -e- Nokhbegan) since 2006

Ranked 19th among more than 300000 participants in Iran's national entrance exam of universities (2006)

Member of Vision and Control of Action group (VISCA) (www.ub.edu/viscagroup/)

Voluntary instructor at Open Cultural Center (www.openculturalcenter.org)

Taught software programming skills to young migrants in Barcelona