Murad Mastrouk

BSc Cognitive Science & Psychology, University of Toronto
403-903-0841 Murad.mastrouk@mail.utoronto.ca LinkedIn muradmastrouk.ca

Profile

As a cognitive scientist working at the intersection of computational neuroscience, psychology, and philosophy, I use predictive processing and Bayesian modelling to investigate foundational questions about how perception, affect, and embodiment shape the phenomenological structure of experience as well as the mechanisms underlying social processes.

I apply these methods to domains including political cognition, religious and mystical experience, musical perception, and dyadic social interaction, aiming to clarify how generative models operate across complex cultural and interpersonal contexts.

Experience

Research Assistant **Dec. 2025 – Present**
Stanford Muslim Mental Health & Islamic Psychology *Remote*

- Authoring Chapter 1 of a forthcoming edited volume on Islamic contemplation, developing a comparative framework for overlapping magisteria across religious and secular epistemologies.
- Conducting cross-tradition literature reviews on Islamic, Buddhist, and secular mindfulness practices to identify theoretical convergence, methodological assumptions, and epistemic boundaries.

Research Assistant **Sept, 2025 – Present**
Social Perception and Cognition Lab, University of Toronto *Toronto, ON*

Protest Cognition (PI: Kelsey Neuenswander)

- Collected pre-violence protest audio clips to determine if individuals can reliably predict violence.
- Conducting exploratory analysis of 150+ protest events, isolating pre-escalation acoustic cues to design a three-way comparative study between human threat perception, deep learning prediction, and cognitive architectures (ACT-R).
- Transforming protest audio into spectrograms (Librosa) to training deep learning models (PyTorch) in predicting protest escalation.

Cross-Cultural Musical Cognition (PI: Colin Boothby)

- Conducting a computational analysis of musical performances to understand gendered auditory cues.
- Extracting auditory descriptors to examine pitch, tonality, and style (MIRToolBox MATLAB).
- Assisting in the formalization of a Brunswick Lens model of gendered auditory cues in musical performances.

Researcher & Psychosocial Support **Jan, 2025 – Present**
Dardasheh Wanabqa *Remote*

- Leading a mental health survey with 300+ Syrians, triangulating data with WHO's HeRAMS reports to inform culturally grounded policy in post-conflict settings.
- Designing culturally responsive therapeutic workshops grounded in trauma-informed care, aiming to improve coping outcomes and resilience among Syrians amid ongoing instability and resource limitations.

Lead Researcher **May, 2024 – Jan, 2025**
Hull Services *Calgary, AB / Hybrid*

- Led a mixed-methods study on therapeutic duration and psychosocial outcomes for 1,500+ youth across 8 therapeutic care programs to inform provincial policy for children and youth mental health.
- Performed parametric/ non-parametric analyses using Meta's Prophet forecasting, ARIMA, & Random Forest modelling.
- Co-authored research reports with Dr. Ernie Alama informing strategies for therapeutic care optimization.

Research Associate **Oct, 2023 – Jun, 2024**
Princess Margaret Cancer Centre - UHN *Toronto, ON*

- Interpreted and extracted correlative pharmacokinetic data for Phase 1 oncology trials, providing critical insights to principal investigators and pharmaceutical partners.
- Systematized 1,000+ source documents to ensure data integrity and regulatory compliance, and audit readiness across 160 global sites, as part of the NIH's only clinical trial conducted outside the U.S.

Independent Research Project **Sept, 2023 – May, 2024**
Cognitive Science Department *Toronto, ON*

- Conducted a systematic review of 100+ peer-reviewed studies on altered states of consciousness using NLP-based article screening (spaCy, NLTK) and meta-analytic techniques (R 'metafor').
- Designed a multidimensional model linking altered cognition to enhanced problem representation, reduced functional fixedness, and improved creative problem solving, contributing to emerging bayesian models of constraint relaxation.

Teaching & Academic Service

President: Cognitive Science & Artificial Intelligence Student Association
Editor-in-Chief: Inkblot Undergraduate Psychology Journal
Editor: Cognitive Science & Articial Intelligence Undergraduate Journal
Undergraduate Representative: University College Curriculum Committee (Cognitive Science)
Conference Lead: Cognitive Science Research Community (CoRC)

Technical Skills

Languages: English, Arabic, French, Circassian

Research Tools:

Quantitative & Statistical: Python, R, Jamovi, EFA/CFA
Computational & Modeling: MATLAB, ACT-R, NEURON
Qualitative: NVivo, ATLAS. ti
Workflow: Zotero, Overleaf, GitHub

Certifications:

Health Canada Division 5 (Drugs for Clinical Trials)
Good Clinical Practice (ICH-GCP)
Red Cross Psychological First Aid
Human Research Protection Training (U.S. Dept. of Health and Human Services)

Presentations & Talks

Mastrouk, M. (Feb 2023). *Insight Problem Solving in Altered States of Consciousness.* Confluence Undergraduate Conference, Toronto.

Mastrouk, M. (Oct 2023). *Interoception: A Critical Sense of Wellbeing.* UofT Buddhism, Psychology, Mental Health Association, Toronto.

Mastrouk, M. (Nov 2023). *Meta-Learning Neural Networks in Metacognitive Models.* Computational Cognition Seminar, Toronto.

Mastrouk, M. (Feb 2024). *Hypo-Egoic Cognition & Pivotal Mental States.* Seminar on The Cognitive Self, Toronto.

Mastrouk, M. (Oct 2024). *The Cognitive Science of Pedagogical Learning.* Cognitive Science Student Association, Toronto.

Mastrouk, M. (Apr 2025). *Therapeutic Duration and Psychosocial Readiness.* Psychology Undergraduate Research Conference, Toronto.