MEDHA SHEKHAR

medha@gatech.edu
School of Psychology
Georgia Institute of Technology

EDUCATION

PhD in Cognition and Brain Sciences *Aug 2016 - Aug 2021*
Georgia Institute of Technology
Minor in Computational Neuroscience
Doctoral Thesis: How do humans give confidence? Understanding the mechanisms of confidence generation using model comparisons

Master of Science in Cognition and Brain Sciences *Aug 2016 - May 2018*
Georgia Institute of Technology
Master's Thesis: Distinguising the roles of dorsolateral and anterior PFC in visual metacognition

Bachelor of Science *Aug 2012 - May 2016*
Indian Institute of Science
Major: Biology with specialization in Neuroscience
Bachelor's Thesis: Studying the neural basis of eye-hand coordination using TMS

RESEARCH EXPERIENCE

Perception, Neuroimaging and Modeling (PNM) Lab, Georgia Tech *Oct 2022 - Present*
Postdoctoral researcher
PI: Prof. Dobromir Rahnev

Reward, Decision Making and Psychopathology Group *Oct 2021 - Sept 2022*
Max Planck UCL Centre for Computational Psychiatry and Ageing Research
Postdoctoral research fellow
PI: Prof. Raymond Dolan

Perception, Neuroimaging and Modeling (PNM) Lab, Georgia Tech *Aug 2016 - Aug 2021*
Graduate researcher
PI: Prof. Dobromir Rahnev

Centre for Neuroscience, Indian Institute of Science *May 2015 - Jul 2016*
Undergraduate research assistant
PI: Prof. Aditya Murthy

PEER-REVIEWED PUBLICATIONS

1. **Xue, K., Shekhar, M., Rahnev, D. (2021). Examining the robustness of the relationship between metacognitive efficiency and metacognitive bias. *Consciousness and Cognition*, 95:103196.**

2. **Shekhar, M., Rahnev, D. (2021). Sources of Metacognitive Inefficiency. *Trends in Cognitive Sciences*, 25(1), 12–23.**

3. **Shekhar, M., Rahnev, D. (2021). The nature of metacognitive inefficiency in perceptual decision making. *Psychological Review.*, 128(1), 45–70. Data and Code**

4. Yeon, J., Shekhar, M. Rahnev, D. (2020). Overlapping and unique neural circuits are activated during perceptual decision making and confidence. *Sci Rep*, 10, 20761. Data and Code

5. Rahnev, D. Adler, W. T., Aguilar-Lleyda, D., Akdoğan, B., Arbuzova, P., Atlas, L. Y.,..., Shekhar, M.,... Zylberberg, A. (2020). The Confidence Database. *Nature Human Behaviour*, 4:317-325.

6. Bang, JW., Shekhar, M., Rahnev, D. (2019) Sensory noise increases metacognitive efficiency. *Journal of Experimental Psychology: General*, 148(3):437-452. Data and Code. Data and Code

7. Shekhar, M., Rahnev, D. (2018) Distinguishing the Roles of Dorsolateral and Anterior PFC in Visual Metacognition. *Journal of Neuroscience* 38:5078–5087. Data and Code. Data and Code

PRE-PRINTS

1. Shekhar, M., Rahnev, D. (submitted). How do humans give confidence? Comparing popular models of confidence generation.

2. Xue K., Shekhar, M., Rahnev, D. Comparing Bayesian and signal detection theoretical accounts of confidence generation

CONFERENCE PRESENTATIONS

1. Shekhar, M. & Rahnev, D. How do humans give confidence? Comparing popular models of confidence generation. *Association for the Scientific Studies of Consciousness (ASSC)*, June, 2021.

2. Xue, K., Shekhar, M., Rahnev, D., The shape of metacognitive noise confounds metacognitive efficiency with confidence bias. *Vision Sciences Society (VSS)*, May, 2021.

3. Shekhar, M. & Rahnev, D. Using model comparisons to reveal the mechanisms of confidence generation. *Vision Sciences Society (VSS)*, May, 2021.

4. Shekhar, M. & Rahnev, D. Arbitrating between different models of metacognition. Poster. *Vision Sciences Society (VSS)*, June, 2020. Accepted but withdrawn due to cancelled in-person meeting.

5. Shekhar, M. & Rahnev, D. The nature of metacognitive inefficiency in perceptual decision making. Poster. *Vision Sciences Society (VSS)*, May, 2019.

6. Shekhar, M. & Rahnev, D. Distinguishing the roles of dorsolateral and anterior PFC in visual metacognition. Poster. *Smokies Cognition and Neuroscience Symposium (SCANS)*, April, 2019.

7. Shekhar, M. & Rahnev, D. Distinguishing the roles of dorsolateral and anterior PFC in visual metacognition. Poster. *Vision Sciences Society (VSS)*, May, 2018.

8. Rahnev, D., Bang, J.W., Shekhar, M.. The influence of low-level stimulus characteristics on metacognitive efficiency. Talk. *Vision Sciences Society (VSS)*, May, 2018.

9. **Rahnev, D., Bang, J.W., Shekhar, M.. Decreasing sensory noise lowers metacognitive efficiency. Poster. *Cognitive Computational Neuroscience (CCN)*, September, 2017.**

10. **Arrington, C.N., Krishnamurthy, L.C., Persichetti, E., Shekhar, M., Harjani, S.A., Baig, H., Krishnamurthy,V., Rahnev, D., & Morris, R. Effects of Continuous Theta Burst Stimulation on the Reading Network 20 and 50 Minutes Post Stimulation. Poster. *Brain Stimulation and Imaging Meeting*, June, 2017.**

INVITED TALKS

2021	**Perceptual Metacognition Meeting. University of Amsterdam, Netherlands**
2021	**Embodied Cognition Group. Duke Aarhus University, Denmark**
2021	**Kwok Lab. Duke Kunshan University, China**
2021	**Cognitive Science Lab. Universidad del Desarrollo, Chile**
2018	**Cognition & brain sciences seminar, Georgia Tech**
2017	**Cognition & brain sciences seminar, Georgia Tech**

AWARDS

Exceptional Student Award ***Apr 2021***
Annual award given to the best graduate student from the School of Psychology, Georgia Institute of Technology

Kishore Vaigyanik Protsahan Yojana (KVPY) ***Aug 2012 - 2016***
Fellowship award from the Department of Science & Technology (DST), Government of India

PROFESSIONAL MEMBERSHIPS

Society for Neuroscience (SfN), Vision Sciences Society (VSS)

JOURNAL REVIEWS

Communications Biology
Neuroscience and Biobehavioral Reviews
Psychological Review
eNeuro
npj Mental Health Research
Frontiers Psychiatry

TEACHING EXPERIENCE

PSYC 4090: Cognitive Neuroscience ***Spring 2021, 2020 & 2019***
Graduate Teaching Assistant, Georgia Tech

PSYC 2015: Research Methods ***Fall 2019 & Spring 2018***
Graduate Teaching Assistant, Georgia Tech

PSYC 3040: Sensation and Perception ***Fall 2017 & 2016***
Graduate Teaching Assistant, Georgia Tech

PSYC 1101: General Psychology ***Summer 2017***
Graduate Teaching Assistant, Georgia Tech

COMMUNITY OUTREACH

- **TMS demonstration for Georgia Tech undergraduate students**
- **Brain Awareness Day Program: Demonstrated TMS for high school students**
- **Member of the Graduate Student Government Association (GSGA) at Georgia Tech**

TECHNICAL SKILLS

Programming	**MATLAB, JSPsych (JavaScript), Python, R**
Research	**fMRI, TMS, psychophysics, computational modeling**
Software	**SPM, NeuroNavigator (navigation software for TMS), PsychToolbox**

RESEARCH INTERESTS

Perceptual decision making	**Learning**	**Vision**
Computational modeling	**Confidence**	**Metacognition**
Prefrontal cortex	**Top-down control**	

RELEVANT COURSEWORK

Computational neuroscience	**Information processing models in neural systems**
Machine learning	**Systems and cognitive neuroscience**
Cognitive psychology	**Theoretical and Computational neuroscience**