# Tanvi Ranjan

# **Research** Interests

Motor learning, Computational Neuroscience, Statistical modelling

#### Education

- 2016–2022 **Ph.D.**, *Applied Math*, Harvard University, Cambridge, MA, USA. Focus: Neuromotor adaptation Supervisor: Maurice Smith
- 2011–2016 **Bachelors of Technology**, *Electronics and Electrical Communication Engineering*, Indian Institute of Technology, Kharagpur. *GPA – 9.5/10.*

## Work Experience

- May Aug **Research intern**, Facebook Reality Labs. 2021 Formulated metrics for usability of neural interfaces
- May Aug **Research intern**, IBM Research. 2014 Worked on Smarter Grid solutions team

# **Research** Experience

- Jan 2021 Research Assistant, Digital Psychiatry Division, Beth Israel Deaconess Medical present Center.
  - Advisor: John Torous Relapse prediction in pat

Relapse prediction in patients with Schizophrenia.

Jan 2017 - Graduate Research, School of Engineering and Applied Sciences, Harvard present University.

Advisor: Maurice Smith Behavioural motor learning from errors in motor actions.

- May July Undergraduate summer research, Department of Physics, Massachusetts Institute 2015 of Technology.
  - Advisor: Jeff Gore

Oscillatory dynamics of microbial populations in a mutualism environment

June 2014 - Undergraduate Research, Department of Electronics and Electrical Communication June 2016 Engineering.

Advisor: Ritwik Layek Modelling bacterial population growth using evolutionary game theory

#### Publications

- 2021 **T. Ranjan**, M. Smith, J. Melcher, M. Keshavan, J. Torous Longitudinal symptom changes and association with home time in people with schizophrenia: an observational digital phenotyping study, under review
- 2020 **T. Ranjan** and M. Smith. Cancellation of internally generated errors from the signal driving motor adaptation, in submission
- 2018 S. Gokhale<sup>\*</sup>, A. Conwill<sup>\*</sup>, **T. Ranjan**, J. Gore. *Migration alters oscillatory dynamics* and promotes survival in connected bacterial populations, Nature Communications

- 2016 J. Banerjee, **T. Ranjan**, R. Layek. Stability Analysis of Population Dynamics Model in Microbial Biofilms with Non-participating Strains, 7th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics
- 2015 J. Banerjee, T. Ranjan, R. Layek. Dynamics of Cancer Progression and Suppression, 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)

#### Conferences

- 2020 Conference talk: **Tanvi Ranjan** and Maurice Smith Implicit motor adaptation is driven by motor performance prediction error, rather than sensory prediction error, Advances in Motor Learning and Motor Control (MLMC)
- 2020 Poster: Sunandha Srikanth<sup>\*</sup>, Frances Cho<sup>\*</sup>, Jun Ye<sup>\*</sup>, **Tanvi Ranjan**<sup>\*</sup>, Maxym V Myroshnychenko Discrete and continuous dynamics of neural state space during decision making, Bernstein conference
- 2019 Poster: **Tanvi Ranjan** and Maurice Smith. *Elimination of the internally generated component of error from the teaching signal for motor adaptation*, Society for Neuroscience (SfN)
- 2018 Conference Talk: **Tanvi Ranjan** and Maurice Smith. *Cancellation of internally* generated errors from the signal driving motor adaptation, Advances in Motor Learning and Motor Control (MLMC)
- 2017 Poster: **Tanvi Ranjan** and Maurice Smith *Dissecting motor variability into accumulating and non accumulating components*, Society for Neuroscience (SfN)

## Teaching Experience

- Spring 2021 Grader for Decision Theory, Harvard University
- Spring 2019 Teaching assistant for Decision Theory, Harvard University
  - Fall 2017 Teaching assistant for Science and Cooking, Harvard University
  - Fall 2015 Teaching assistant for Electrical Networks, IIT Kharagpur

#### Relevant coursework

- Computation Probability, Bayesian Data Analysis, Decision Theory, Introduction to Disordered Systems, Neural Computation (Harvard), Statistical Mechanics (MIT), Computational Neuroscience (online Neuromatch Academy)
- Neuroscience Neurobiology (Harvard Medical School), Neural Control of Movement (Harvard)

#### • Technical Skills

MATLAB, PYTHON, R, JAVA, C++