

BIOGRAPHICAL SKETCH

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NAME: Richa Rai

eRA COMMONS USER NAME (credential, e.g., agency login): RICARAI

POSITION TITLE: Predoctoral Student/ Graduate Fellow

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Rutgers, The State University of New Jersey New Brunswick, New Jersey	B.S.	09/2013	05/2017	Public Health, Psychology
Rutgers, The State University of New Jersey New Brunswick, New Jersey	M.S.	08/2018	12/2020	Psychology – Cognitive Psychology
Rutgers, The State University of New Jersey New Brunswick, New Jersey	M.S.	12/2020	04/2023 (expected)	Computer Science
Rutgers, The State University of New Jersey New Brunswick, New Jersey	Ph.D.	08/2018	08/2023 (expected)	Psychology – Cognitive Psychology

A. Personal Statement

As a cognitive scientist with a focus on motor learning in infants, my research aims to understand how studying the motor patterns of infants can glean insight into the underlying mechanisms for neurodevelopment. Using noninvasive motion capture techniques, I investigate the natural movement patterns underlying motor learning in infants and young children. My work has contributed to a deeper understanding of the cognitive and neural exploration processes that support the development of motor skills in early life and has important implications for our understanding of both typical and atypical motor development. My background in both Computer Science and Psychology enables me to apply novel techniques not frequently used in the field of development.

I am particularly interested in characterizing the transition from spontaneous to intentional movements in neonates and signaling the point in time when human babies begin to have a clear social understanding of the self and others. I am also developing methods to scale up our basic research to the home environment and diversify our pool of participants to include underrepresented groups across the population.

My work has the potential to inform the development of interventions for infants and young children with motor impairments, such as those resulting from congenital conditions or other neurodevelopmental disorders.

I have a strong track record of publications in leading journals, and have been the recipient of the Dean's Excellence Fellowship at Rutgers University. I have also presented my research at national and conferences for neuroscience and have traveled internationally to teach methods developed in our lab.

I am passionate about making science accessible to all and communicating research and academic findings to the general community. In my position at the New Jersey Autism Center of Excellence, I am fortunate to have contributed to a platform of science communication and outreach.

B. Positions and Honors

Academic Awards and Honors

2013 – 2017	Dean's List – Rutgers University
2018 – 2019	Dean's Excellence Fellowship for Doctoral Study in Psychology
	The Dean's Excellence Fellowship is awarded to a limited number of students at Rutgers University who demonstrate outstanding qualifications

Professional Experience

June 2017 – August 2017	Memorial Sloan Kettering Cancer Center – Summer Program
Jan 2017 – June 2017	St. Jude Children's Research Hospital – Internship Program
2016 – 2018	Research Assistant at the Sensory Motor Integration Lab
2017 – Current	Lab Manager for the Sensory Motor Integration Lab (SMIL)
2018 – Current	Graduate Research Assistant at the SMIL
2018 – Current	Member of the Director's Office for the New Jersey Autism Center of Excellence
June 2022 – Sept 2022	Machine Learning Intern at Deliberate Solutions, Inc.

Leadership/Mentorship Experience

2019 – 2020	Cognitive Science Graduate Student Representative – selected to serve as the graduate student representative on behalf of students in the area of Cognitive Science
2019 – Current	MIND Network Member – Mentor at Mentoring to Improve Neuroscience Diversity Program for Undergraduate students interested in STEM

C. Contributions to Science

- Bermperidis, T., **Rai, R.**, Ryu, J., Zanutto, D., Agrawal, S. K., Lalwani, A. K., & Torres, E. B. (2021). Optimal time lags from causal prediction model help stratify and forecast nervous system pathology. *Scientific reports*, 11(1), 1-24. <https://doi.org/10.1038/s41598-021-00156-2>
- Bokadia, H., **Rai, R.**, & Torres, E. B. (2020). Digitized Autism Observation Diagnostic Schedule: Social Interactions beyond the Limits of the Naked Eye. *Journal of personalized medicine*, 10(4), 159. https://doi.org/10.1162/neco_a_01263
- Torres, E. B., **Rai, R.**, Mistry, S., & Gupta, B. (2020). Hidden Aspects of the Research ADOS Are Bound to Affect Autism Science. *Neural computation*, 32(3), 515–561. https://doi.org/10.1162/neco_a_01263
- Torres, E. B., Vero, J., & **Rai, R.** (2018). Statistical Platform for Individualized Behavioral Analyses Using Biophysical Micro-Movement Spikes. *Sensors (Basel, Switzerland)*, 18(4), 1025. <https://doi.org/10.3390/s18041025>