NUTTIDA RUNGRATSAMEETAWEEMANA

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PROFESSIONAL APPOINTMENTS

Provost Research Fellow - Inclusive Faculty Pathways Initiative — Jan 2023 -
Department of Biomedical Engineering, Columbia University

Visiting Postdoctoral Scientist - Department of Neurosurgery — Jun 2022 - Dec 2022
Cedars-Sinai Medical Center, Supervisor: Dr. Ueli Rutishauser

Swartz Fellow - Computational Neurobiology Laboratory — Jul 2020 - Dec 2022
The Salk Institute for Biological Studies, Supervisor: Dr. Terrence J. Sejnowski

Postdoctoral Research Fellow - Humans in Complex Systems Division — Jul 2020 - Jun 2021
The US Army Research Laboratory, Supervisor: Dr. Javier O. Garcia

EDUCATION

Ph.D., M.S. in Neurosciences (Computational Specialization), UC San Diego — Jun 2020
Thesis: *Neural Dynamics of Probabilistic Perceptual Decision Making in the Human Brain*
Advisor: Dr. John T. Serences & Dr. Larry R. Squire

B.A. in Mathematics and Neuroscience with Highest Distinction, Middlebury College — May 2014
Mathematics Thesis: *A Mathematical Approach to Selective Visual Attention*
Neuroscience Thesis: *The Influence of Internal and External Arousal on Memory*
Advisors: Dr. Jason Arndt & Dr. Michael Olinick

AWARDS, HONORS, & DISTINCTIONS

Awards and Honors

U.S. ARL Humans in Complex Systems Award	2023
Rising Star in Engineering in Health Award	2022
Inaugural UCLA Young Neuroscience Citizen Scholar	2022
The Allen Institute NeuroDataReHack Workshop Travel Award	2022
Edwards-Yeckel Postdoctoral Professional Development Award	2022
UC San Diego Chancellor's Outstanding Postdoctoral Scholar Award	2021
Stanford.Berkeley.UCSF Next Generation Faculty Symposium Honorable Mention	2021
U.S. ARL Postdoc and Early Career Research Symposium Dr. Brad Forch Award for Best Poster	2021
Salk Institute Next Gen Postdoc	2021
Salk Institute Career Advancement Award	2021
Cell Press/ Society for Neuroscience Anuradha Rao Memorial Award	2021
Middlebury College Senior Research Award	2013 - 2014
Middlebury College Scholar Award	2010 - 2014
Middlebury College Research Travel Award	2013

Research Funding

DoD Strengthening Teamwork for Robust Operations in Novel Groups ($100,000) — 2022 - 2023
- Proposal: *Improving human-AI integration through adaptive value-based learning*
- Role: Principal investigator

Kavli Institute for Brain and Mind Postdoctoral Award ($50,000) — 2022 - 2023
- Proposal: *Cross-species hierarchical dynamics of adaptive schema learning*
- Role: Principal investigator

U.S. ARL BAA for Basic & Applied Scientific Research Award ($207,959) — 2021 - 2023
- Proposal: *Hybrid decision making in humans and artificial neural networks*
- Role: Principal investigator

Swartz Foundation Postdoctoral Fellowship for Theory in Neuroscience	2021 - 2023
Salk Women & Science Special Award ($15,220)	2021 - 2022
U.S. ARL Human Research & Engineering Directorate Postdoctoral Fellowship ($58,102)	2020 - 2021
U.S. ARL Graduate Fellowship ($120,118)	2018 - 2020
UC San Diego Neurosciences Graduate Program Training Grant	2014 - 2015
Middlebury College Summer Research Fellowship	2012
Thailand Ministry of Science and Technology Undergraduate Research Scholarship	2009 - 2014

PUBLICATIONS

[1] **Rungratsameetaweemana N***, Kim R*, Chotibut T, Sejnowski TJ. Random noise promotes slow heterogeneous synaptic dynamics important for robust working memory computation. bioRxiv 2022, 10.1101/2022.10.14.512301.

[2] **Rungratsameetaweemana N**, Lainscsek C, Cash SS, Garcia JO, Sejnowski TJ*, Bansal K*. Brain network dynamics codify heterogeneity in seizure evolution. *Brain Communications*, 2022.

[3] Pinto ILD, **Rungratsameetaweemana N**, Flaherty K, Periyannan A, Meghdadi A, Richard C, Berka C, Bansal K, Garcia JO. Intermittent brain network reconfigurations and the resistance to social media influence. *Network Neuroscience*, 2022.

[4] **Rungratsameetaweemana N**. Understanding motor abnormalities in psychiatric disorders as altered sensorimotor processing. *Biological Psychiatry: Global Open Science*, 2021.

[5] Pao G, Smoth C, Park J, Takahashi K, Watanakeesuntorn W, Natsukawa H, Chalasani SH, Lorimer T, Takano R, **Rungratsameetaweemana N**, Sugihara G. Experimentally testable whole brain manifolds that recapitulate behavior. *arXiv:2106.10627*, 2021.

[6] Lainscsek C*, **Rungratsameetaweemana N***, Cash SS, Sejnowski TJ. Cortical chimera states predict epileptic seizures. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 29: 121106, 2019.

[7] **Rungratsameetaweemana N**, Squire LR, Serences JT. Preserved capacity for learning statistical regularities and directing selective attention after hippocampal lesions. *The Proceedings of the National Academy of Sciences*, 116 (39): 19705-19710, 2019.

[8] **Rungratsameetaweemana N**, Serences JT. Dissociating the impact of attention and expectation on early sensory processing. *Current Opinion in Psychology*, 29: 181-186, 2019.

[9] Nelli S, Itthipuripat S, **Rungratsameetaweemana N**, Serences JT. The speed-accuracy tradeoff reveals flexible access to accumulating sensory evidence during human decision-making, bioRxiv 2018, 10.1101/420430v1.

[10] **Rungratsameetaweemana N***, Itthipuripat S*, Salazar A, Serences JT. Expectations do not alter early sensory processing during perceptual decision-making. *Journal of Neuroscience*, 2018.

[11] **Rungratsameetaweemana N**, Squire, LR. Preserved capacity for scene construction and shifts in perspective after hippocampal lesions. *Learning & Memory*, 25: 347-351, 2018.

[12] Itthipuripat S, Garcia, JO, **Rungratsameetaweemana N**, Sprague TC, Serences JT. Changing the spatial scope of attention alters patterns of neural gain in human cortex. *Journal of Neuroscience*, 2014.

* *these authors made equal contributions*

INVITED TALKS

[1] *The Brain Conference: Structuring Knowledge For Flexible Behaviour*. Denmark. Oct, 2023.

[2] *Center for Theoretical Neuroscience Seminar*. Columbia University. Jun, 2023.

[3] *Innovators in Cognitive Neuroscience Seminar Series*. Dartmouth College. Mar, 2023.

[4] *COSYNE workshop: How do interneurons control neural computations?* Mar, 2023.

[5] *Inaugural UCLA Seminars by Young Neuroscience Citizen Scholars Series*, UCLA. Jan, 2023.

[6] *Winter School on Brains and Computation*. UC San Diego. Dec, 2022.

[7] *Rademaker Lab, Max Planck Society & the Ernst Strüngmann Institute*. Nov, 2022.

[8] *U.S. ARL Humans in Complex Systems Meeting*, U.S. Army Aberdeen Proving Ground. Nov, 2022.

[9] *Biomedical and Translational Science Seminar Series*, Cedars-Sinai Medical Center. Sep, 2022.

[10] *The Swartz Foundation Meeting*, Cold Spring Harbor Laboratory. Aug, 2022.

[11] *Tarr Lab*, Carnegie Mellon University. Jul, 2022.

[12] *Advanced Methods in Neuroscience*, King Mongkut's U of Technology Thonburi, Thailand. Jun, 2022.

[13] *Department of Neuroscience*, Icahn School of Medicine at Mount Sinai. Jun, 2022.

[14] *Biomedical Engineering Department*, Columbia University. Jan, 2022.

[15] *Quantitative Brown Bags Seminar Series*, Department of Psychology, UC Davis. Dec, 2021.

[16] *Hacking for Defense*, Stanford University. Nov, 2021.

[17] *UCLA Cognitive Neuroscience Lab*, UC Los Angeles. Oct, 2021.

[18] *World Wide NeuRise Seminar Series.* Oct, 2021.

[19] *The Helyx Initiative Seminar Series*. Oct, 2021.

[20] *The Swartz Foundation Meeting*, Computational Neuroscience Center, U of Washington. Oct, 2021.

[21] *The ARL Postdoc and Early Career Research Symposium.* Sep, 2021.

[22] *STEMinar Series*, UC San Diego. May, 2021.

[23] *Computational Cognitive Neuroscience Lab*, Georgia Institute of Technology. Mar, 2021.

[24] *Diversity and Science Lecture Series*, UC San Diego. Dec, 2020.

[25] *Intelligent and Complex Systems Seminar Series*, Chulalongkorn University, Thailand. Jun, 2020.

[26] *Neuroscience and Psychology Research Talk Series*, Middlebury College. Jan, 2020.

CONFERENCE TALKS

[1] Probing interneuron-based computations underlying adaptive decision making. *Computational and Systems Neuroscience Meeting*. Mar, 2023.

[2] Probabilistic visual processing in humans and recurrent neural networks. *Annual Optical Society Vision Meeting*. Oct, 2021.

[3] Intrinsic network reconfigurations underlie heterogeneity of seizure dynamics, *Networks 2021: A Joint Sunbelt and Netsci Conference*. Jun, 2021.

[4] Neural dynamics of probabilistic computations in humans and recurrent neural networks. Selected research spotlight, *Virtual Meeting of the Cognitive Neuroscience Society*. Mar, 2021.

[5] Probabilistic information processing in humans and recurrent neural networks. *Neuromatch 3.0 Conference*. Oct, 2020.

[6] Cortical chimera states as predictors for epileptic seizures. Selected research spotlight, *IEEE Engineering in Medicine and Biology Society symposium and workshop on Brain, Mind, and Body: Cognitive Neuroengineering for Health and Wellness*. Dec, 2019.

[7] Expectation influences late stages of information processing. *Annual Meeting of the Vision Sciences Society*. May, 2018.

[8] Mathematical implications of the normalization model of attention. *Annual Conference of Women in Mathematics of New England*. Sep, 2012.

SELECTED POSTER PRESENTATIONS

[1] Singha RG, Kim R, **Rungratsameetaweemana N**. Extracting representations in deep learning models through second-order isomorphism-based tools. *Columbia Data Science Conference*. Apr, 2023.

[2] Kumar S, Garcia JO, **Rungratsameetaweemana N**. Probing population codes and circuit dynamics of probabilistic learning. *Conference on Cognitive Computational Neuroscience*. Aug, 2022.

[3] Kumar S, Garcia JO, **Rungratsameetaweemana N**. Investigating the hierarchical predictive learning process in humans, rodents, and computational models. *Cognitive Neuro. Society Meeting*. Apr, 2022.

[4] **Rungratsameetaweemana N***, Kim R*, Sejnowski TJ. Flexible hierarchical computation in task-driven information processing. *Cold Spring Harbor Laboratory From Neuroscience to Artificially Intelligent Systems*. Apr 2022.

[5] **Rungratsameetaweemana N**, Kim R, Sejnowski TJ. Neural dynamics of probabilistic information processing in recurrent neural networks. *Computational and Systems Neuroscience Meeting*. Feb, 2021.

[6] **Rungratsameetaweemana N**, Lainscsek C, Cash SS, Sejnowski, Garcia JO, Bansal K. Intrinsic network topologies underlie distinct propagation dynamics of focal seizures. *Society for Neuroscience Global Connectome*. Jan, 2021.

[7] **Rungratsameetaweemana N**, Lainscsek C, Garcia JO, Bansal K, Cash SS, Sejnowski TJ. Uncovering dynamical states through concurrent electroencephalography (EEG) and electrocorticography (ECoG). *Virtual Meeting of the Cognitive Neuroscience Society*. Jun, 2020.

[8] **Rungratsameetaweemana N**, Lainscsek C, Cash SS, Sejnowski TJ. Cortical chimera states as predictors for epileptic seizures. *Computational and Systems Neuroscience Meeting*. Feb, 2020.

[9] **Rungratsameetaweemana N**, Lainscsek C, Cash SS, Sejnowski TJ. Cortical chimera states as predictors for epileptic seizures. *IEEE Engineering in Medicine and Biology Society symposium and workshop on Brain, Mind, and Body: Cognitive Neuroengineering for Health and Wellness*. Dec, 2019.

[10] **Rungratsameetaweemana N**, Itthipuripat S, Serences JT. Dissociable modulation of top-down control on perceptual decision making. *Meeting of the Vision Sciences Society*. May, 2019.

[11] **Rungratsameetaweemana N**, Schmaelzle R, Bansal K, Wasylyshyn N, Roy H, ..., Vettel JM, Garcia JO. Capturing communication success of driver-passenger dyads during real-world driving. *Conference of the IEEE Engineering in Medicine and Biology Society on Neural Engineering*. Mar, 2019.

[12] **Rungratsameetaweemana N**, Vettel JM, ..., Serences JT, Garcia JO. Intrinsic neural oscillations modulate feature selectivity in human visual cortex. *Meeting of Society for Neuroscience*. Nov, 2018.

[13] **Rungratsameetaweemana N**, Itthipuripat S, Serences JT. Temporal dynamics of prior expectations on human perceptual decision-making. *European Conference on Visual Perception*. Aug, 2018.

[14] **Rungratsameetaweemana N**, Squire LR, Serences JT. Effects of attention and expectation on perceptual decision making after medial temporal lobe lesions. *Meeting of the Soc. for Neuro*. Nov, 2017.

[15] **Rungratsameetaweemana N**, Itthipuripat S, Barker E, Wagstaff L, Serences JT. Task-irrelevant contextual expectation impairs orientation discrimination performance. *Meeting of the Vision Sciences Society*. May, 2016.

[16] **Rungratsameetaweemana N**, Itthipuripat S, Barker E, ..., Serences JT. Dissociable effects of attention and expectation on perceptual decision making. *Meeting of the Society for Neuroscience*. Oct, 2015.

[17] **Rungratsameetaweemana N**, Itthipuripat S, Serences JT. Dissociable effects of sensory evidence and expectation during visual discrimination tasks. *Meeting of the Vision Sciences Society*. May, 2015.

[18] **Rungratsameetaweemana N**, Arndt J. The influence of internal and external arousal on memory. *Meeting of the Psychonomic Society*. Nov, 2014.

TEACHING & MENTORING EXPERIENCE

Research Mentor

- Tomas Gallo Aquino (Columbia University, Postdoc researcher) 2023 -
- Yash Bhambhani (Columbia University, Graduate researcher) 2023 -
- Rudra Gyawali Singha (Columbia University, Graduate researcher) 2023 -
- Yulia Nurislamova (Max Planck Society & the Ernst Strüngmann Institute, Grad researcher) 2022 - 2023
- Shruti Kumar (Columbia University, Graduate researcher) 2021 - 2023
- Julie Eitzen (UC San Diego, Undergraduate researcher) 2021 - 2022
- Aayushi Vishnoi (Indian Institute of Science Education & Research, Post-bac researcher) 2021
- Carolyn Deustch (Cal Poly State U, Undergraduate researcher) 2021
- Mia Borzello (UC San Diego, Graduate researcher) 2020
- Julia Phillips (Fordham U, Undergraduate researcher) 2020
- Brianna Marsh (UC San Diego, Graduate researcher) 2020
- Jimmy Yu (UC San Diego, Undergraduate researcher) 2017 - 2019
- Chenlu Wang (UC Los Angeles, Undergraduate researcher) 2018
- Emely Anaya (UC San Diego, Undergraduate researcher) 2018
- Kevin Diep (UC San Diego, Undergraduate researcher) 2017
- Lilli Wagstaff (UC San Diego, Undergraduate researcher) 2016 - 2017
- Tzu-en Wang (UC San Diego, Undergraduate researcher) 2016 - 2017
- Emily Barker (UC San Diego, Undergraduate researcher) 2015 - 2017

Research Mentor, *Heithoff-Brody Scholars Program* 2021

- Nicole Men (High school researcher, The Bishop's School/ Columbia University)

Project Mentor, *Neuromatch Academy: Computational Neuroscience Course* 2021

Guest Lecturer

Thailand Brain Building Blocks Lecture Seires, Chulalongkorn University 2023
Probabilistic Models of Human and Machine Learning , CU Boulder 2023
STARTneuro Summer Research Training Program, UC San Diego 2022
Neuroscience: From Brain to Behaviors, UC San Diego 2019
Geometry, Roong Arun High School, Thailand 2011

Calculus I, Roong Arun High School, Thailand 2011
General Biology, Princess Chulabhorn's College, Thailand 2010

Teaching Assistant
Special Topics in Psychology Course, UC San Diego 2015
Neurophysiology, Middlebury College 2013
Multivariable Calculus, Middlebury College 2013
Differential Equations, Middlebury College 2013
Psychological Statistics , Middlebury College 2013
Introduction to Psychology, Middlebury College 2013
Heart of Mathematics, Middlebury College 2012
Calculus II, Middlebury College 2011 - 2012

SERVICE & OUTREACH

Competition Judge, *UC Leadership Excellence through Advanced Degrees Research Symposium* 2022
Mentor, *Disabled in Higher Education Mentorship Program* 2021 -
Committee, *UC San Diego STEM Career Symposium & Exposure to Industry Program* 2021 -
Mentor, *Cientifico Latino: Graduate Student Mentorship Initiative* 2021 -
Mentor, *Project Encephalon* 2021 -
Mentor, *UC San Diego Mentor for All Program* 2021 -
Mentor, *BraiNY Bunch* 2021 -
Mentor, *Association for Women in Science* 2021 -
Mentor, *Expanding Your Horizons of San Diego* 2021 -
Mentor, *Society for Women in Graduate Studies* 2021 -
Ambassador, *Salk Society of Research Fellows* 2021 -
Member, *Read for The Blind, Thailand* 2018 - 2021
Panel Speaker, *UC San Diego Paths to PhDs Workshop* 2021
Competition Judge, *The Afro-Academic, Cultural, Technological and Scientific Olympics* 2021
Reviewing Mentor, *Computational & Systems Neuroscience (Cosyne) Mentoring Forum* 2021
Member, *Diversity Admission Committee*, Neurosciences Grad Program, UC San Diego 2015 - 2020
Team Member, *Xiao Pengyou: the Organization for Asian Adoptees in Vermont*, VT 2011 - 2014
Program Director, *Pakchong Community STEM Outreach*, Thailand 2011 - 2014
Executive Board Member, *Southeast Asian Service Leadership Network (SEALNet)* 2011
Team Member, *Middlebury College Community Friends Outreach Program* 2011
Program Leader, *National Mathematics and Science Outreach*, Thailand 2010

SELECTED REVIEWING SERVICE

Biological Psychiatry: Global Open Science, Cortex, eLife, Expert Systems with Applications, European Journal of Neuroscience, IEEE International Conference of Systems, Man, and Cybernatics, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Neural Networks and Learning Systems, Journal of Experimental Psychology: General, Journal of Experimental Psychology: Human Perception and Performance, Journal of Cognitive Neuroscience, Journal of Mathematical Psychology, Journal of Neurophysiology, Journal of Neuroscience, Journal of Neuroscience Methods, Learning & Memory, NeurIPS workshop on Human and Machine Decisions, NeurIPS workshop of Shared Visual Representations in Human & Machine Intelligence, NeuroImage, Neurons, Behavior, Data analysis, and Theory, PLOS Computational Biology, Scientific Reports

REFERENCES

Dr. Terrence J. Sejnowski (terry at snl.salk.edu)
Francis Crick Professor, The Salk Institute for Biological Studies

Dr. John T. Serences (jserences at ucsd.edu)
Professor of Psychology and Neurosciences, UC San Diego

Dr. Larry R. Squire (lrsquire at ucsd.edu)
Distinguished Professor of Psychiatry, Neurosciences, and Psychology, UC San Diego School of Medicine

Dr. Javier O. Garcia (javier.o.garcia.civ at army.mil)
Neuroscientist and Branch Chief, US DEVCOM Army Research Laboratory