VIKRAM PAL SINGH, PH.D.

Assistant Project Scientist-II

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EXPERIENCE

Assistant Project Scientist-II
University of California, San Diego
2026–Present | San Diego, CA

Assistant Project Scientist-I
University of California, San Diego
2025–2026 | San Diego, CA

Postdoctoral Fellow
Department of Psychology, University of California, San Diego
2020–2025 | San Diego, CA

Senior Research Associate
Centre for Neuroscience, Indian Institute of Science
2019–2020 | Bengaluru, India

SELECTED PUBLICATIONS

Active vision in freely moving marmosets using head-mounted eye tracking
PNAS 122(6): e2412954122
V. P. Singh, J. Li, K. Dawson, J. F. Mitchell, & C. T. Miller
2025 | https://doi.org/10.1073/pnas.2412954122

Primate ACC Encodes Natural Vocal Interactions in a 'Cocktail Party'
bioRxiv
Lefevre, Arthur, Vikram Pal Singh, Timothy Tyree, Jingwen Li, Jean-René Duhamel, and Cory Miller
2025 | https://doi.org/10.1101/2025.10.17.683014

Active Gaze Behavior Organizes V1 Activity in Freely-Moving Marmosets
bioRxiv
Li, Jingwen, Vikram Pal Singh, Jude F. Mitchell, Alexander C. Huk, and Cory T. Miller
2026 | https://doi.org/10.64898/2026.02.05.704079

Explicitly Acquired Interrelations among Mental Schema Reduces Cognitive Load and Facilitates Emergence of Novel Responses in Mice and Artificial Neural Networks
Experimental Brain Research 244(4): 78
Singh, Vikram Pal, Shruti Shridhar, Shankanava Kundu, Richa Bhatt, and Balaji Jayaprakash
2026 | https://link.springer.com/article/10.1007/s00221-026-07252-7

Pharmacokinetics, Fecal Output, and Grimace Scores in Rabbits Given Long-acting Buprenorphine or Fentanyl for Postsurgical Analgesia
JAALAS
Michelle R Farkas, Shanelle Dorn, Liam Muller, Vikram Pal Singh, Yadira J Sepulveda, Raymond T Suhandynata, Jeremiah D Momper, Koichi Masuda, Philip J Richter
2024 | https://jaalas.kglmeridian.com/view/journals/72010024/63/3/article-p303.xml

Adeno-associated viral vectors for functional intravenous gene transfer throughout the non-human primate brain
Nature Nanotechnology
Miguel R. Chuapoco, Nicholas C. Flytzanis, Nick Goeden, J. Christopher Octeau, Kristina M. Roxas, Ken Y. Chan, Jon Scherrer, Janet Winchester, Roy J. Blackburn, Lillian J. Campos, Kwun Nok Mimi Man, Junqing Sun, Xinhong Chen, Vikram Pal Singh, Arthur Lefevre, Cynthia M. Arokiaaraj, Timothy F. Miles, Julia Vendemmiatti, Min J. Jang, John Miche Yeme Bishaw, Bryan Gore, Victoria Omstead, Naz Taskin, Natalie Weed, Jonathan Ting, Cory T. Miller, Benjamin E. Deverman, James Pickel, Lin Tian, Andrew S. Fox, Vixiana Gradinaru
2023 | https://doi.org/10.1038/s41565-023-01419-x

A new paradigm for investigating temporal order memory shows higher order associations are present in recent but not in remote retrieval
Experimental Brain Research 240(2): 611–629
Shridhar S, Singh VP, Bhatt R, Kundu S, Balaji J
2022 | https://link.springer.com/article/10.1007/s00221-021-06282-7

EDUCATION

Ph.D., Cognitive Science
Indian Institute of Science
2020 | India

M.Sc., Cognitive Science
Indian Institute of Science
2020 | India

B.Sc., General Microbiology
University of Pune
2012 | India

RESEARCH INTERESTS

- Body, head, and eye coordination during active vision
- Multisensory integration in freely behaving primates
- Learning and memory across primate brain regions
- Visually guided decision-making and neural computation
- Allocentric visual-space representation in the primate hippocampus

TECHNICAL SKILLS

Programming
Python, C++, and MATLAB for experimental control, data analysis, and computational modeling.

Hardware Engineering
Embedded systems and microcontrollers, including Arduino, ESP32, and Raspberry Pi, for custom hardware and instrumentation.

Surgery
MRI-guided stereotaxic targeting; deep-brain surgery, chronic electrode implantation, intracranial infusions, and postoperative animal care.

Electrophysiology
Recordings in freely moving marmosets using brush arrays, N-form arrays, and Neuropixels probes.

Experimentation
Design, implementation, and analysis of complex behavioral paradigms, automated workflows, and custom data-analysis pipelines.

PATENTS

US 20230404467 A1
Provisional patent application filed by the Regents of the University of California: "Head Mounted Camera and Eye Track System for Animals."

Flavor Dependent Retention of Remote Food Preference Memory

Frontiers in Behavioral Neuroscience 11:7

Singh A, Kumar S, Singh VP, Das A, Balaji J
2017

Estimating the Limiting Speed of Acquisition in Next Generation In-Vivo Imaging at Mesoscales

iScience Notes, Vol. 4, Article 4

Singh VP, Singh A, Balaji J
2019

Optical microscopy methods for understanding learning and memory

Current Science 105: 1537–1548

Singh A, Kumar S, Singh VP, Balaji J
2013

BEYOND THE PROJECTS

Advising

- **2018–2020:** Yagika Kaushik (CNS, IISc), now pursuing a Ph.D. under Prof. Bruce McNaughton.
- **2018–2020:** Shruti Shankarayanan (CNS, IISc), now pursuing an M.Sc. with Prof. Robert M. G. Reinhart.
- **2020–2022:** Vaibhav Chipalkatti (CNS, IISc), now pursuing a Ph.D. with Prof. Anthony Holtmaat.
- **2022–2023:** Seamus McGarvey (University of California, San Diego).
- **2022–2024:** Max Gibson (University of California, San Diego).
- **2023–2024:** Kana Dawson (University of California, San Diego), URH Summer Scholarship.

Invited Talks, Colloquia, and Awards

- **2023** — NIH Brain Behavior Quantification and Synchronization Workshop: Head-mounted eye tracking in freely behaving animals.
- **2022** — Junior Scientist Talk, Marmoset Symposium: Active vision in common marmosets.
- **2020 & 2024** — Marmoset PI Meeting, Boulder, CO; discussions to standardize care and use of marmosets in research.
- **2019** — Zeiss Microscopy Conclave, Bangalore: Multiphoton microscopy, bench to brain.

Conference Poster Presentations

- V. Singh, J. Li, C. Miller. “Behavioral correlates of active vision in freely moving marmosets using head mounted eye-tracking.” Washington, DC: Society for Neuroscience, **2023**.
- V. Singh, J. Li, C. Miller. “Embedded system-based neurophysiology coupled head mounted eye tracking in freely moving marmosets.” San Diego: Society for Neuroscience, **2022**.
- V. Singh, R. Bhatt, S. Kundu, S. Shridhar, A. Singh, S. Sam, B. Jayaprakash. “Bayesian nature of remote memory assisted learning (Mental Schema) and its role in problem solving in mice.” Washington, DC: Society for Neuroscience, **2017**.
- V. Singh, R. Bhatt, S. Kundu, S. Shridhar, A. Singh, S. Sam, B. Jayaprakash. “Acquisition dependent influence of mental schema on problem solving in mice.” San Diego: Society for Neuroscience, **2016**.
- V. Singh, S. Shridhar, S. Kundu, R. Bhatt, S. Sam, A. Singh, S. Kumar, J. Balaji. “Differential influence of neocortical networks (mental schema) in relational and abrupt learning.” Chicago: Society for Neuroscience, **2015**.

AWARDS

Student of the Year for All-Round Performance
AGC, Pune, **2012**

Represented Pune City at Zonal Archery Competition
2011

Most Deserving Student Award
AGC, Pune, **2010**

Chemiad-2010 Pune District 2nd Rank
2010

ACADEMIC SERVICE

Unit Chair for Academic Researchers, UAW 4811, UCSD
2025–2026 | San Diego, CA

SimCo (primate advocacy) Abstract Submission Organizer, USA
2022–2024 | San Diego, CA

Marmoset Bio Symposium Abstract Submission Organizer, Society for Neuroscience Meeting
2022–2023 | San Diego, CA; Chicago, IL

Spikes Speaker Series Organizer, Indian Institute of Science
2017 | Bengaluru, India

Cognition Workshop Organizer, Indian Institute of Science
2013–2018 | Bengaluru, India

General Secretary for Sports and Culture, Indian Institute of Science
2015–2017 | Bengaluru, India