

Gabriel Riegner

CONTACT	email: gariegner@ucsd.edu phone: (323) 459 - 3484 website: griegner.github.io github: griegner
INTERESTS	image and signal analysis, statistics, machine learning, computational neuroscience, medical applications
EDUCATION	
2022 - present	University of California San Diego: PhD in Data Science San Diego, CA Advisors: Armin Schwartzman PhD, Pamela Reinagel PhD Selected coursework: linear regression , linear algebra , optimization, data science algorithms, statistical models, high dimensional statistics , machine learning, topological analysis , data ethics, network science
3.87/4 GPA	
2015 - 2019	University of Southern California: BA with honors in Neuroscience Los Angeles, CA Advisors: Assal Habibi PhD, Sarah Bottjer PhD, Irving Biederman PhD Thesis: Recognition memory for musical melody Selected coursework: cell biology and physiology, neurobiology, systems and cognitive neuroscience
3.83/4 GPA	
2017	University of Otago: one semester exchange program New Zealand
TRAINING	
2023	Neuromatch Academy Deep Learning: summer course on multi-layer perceptrons, convolutional neural networks, natural language processing, and reinforcement learning using PyTorch Project: Evaluating the role of U-Net architecture in image segmentation
2022	San Diego Supercomputer Center: course on high performance computing and GPU/CPU programming
EXPERIENCE	
2022 - present	Graduate student researcher: Halıcıoğlu Data Science Institute UC San Diego Advisors: Armin Schwartzman PhD, Pamela Reinagel PhD, Samuel Davenport PhD Role: developed statistical methods and software for image and signal analysis in the neurosciences Projects: Estimating fMRI timescale maps Testing the spatial correlation between brain maps by subsampling Addressing nonstationarity in drift diffusion models of decision making
2024 - present	Research Consultant: LC Pharmaceuticals San Diego Role: supported a clinical trial on transdermal drug delivery systems with experimental design, survey and biometric analysis, and stakeholder presentations
2024	Google Summer of Code Contributor: NumFOCUS Remote Advisors: Tony Bagnall PhD, Matthew Middlehurst PhD Role: contributed to aeon toolkit, an open-source python package for time series machine learning Project: Time series classification from EEG data
2019 - 2022	Senior research technician: Brain Mechanisms of Pain and Health Lab UC San Diego Advisor: Fadel Zeidan PhD Role: supported clinical trials with experimental design, qualitative pain testing, and brain imaging analysis Projects: Clinical trial on the brain mechanisms of chronic pain relief by meditation Clinical trial on the role of endogenous opioids in chronic pain relief by meditation Pilot study on the effects of meditation during awake craniotomy surgeries
2021 - 2022	Senior research technician: Center for Psychedelic Research UC San Diego Advisors: Fadel Zeidan PhD, Jon Dean PhD Role: supported pilot studies with experimental design, qualitative pain testing, and brain imaging analysis Projects: Pilot study on the brain mechanisms of phantom-limb pain relief by psilocybin Pilot study on the brain mechanisms of chronic pain relief by vaporized cannabis
2015 - 2019	Research technician: Brain and Creativity Institute University of Southern California Advisor: Assal Habibi PhD Role: led study through all phases from experimental design to thesis writing and defense Project: Modeling recognition memory for music using signal detection theory

SKILLS	skill level: 1 beginner, 2 intermediate, 3 advanced	
Programming	Python: NumPy, Pandas, SciPy, Matplotlib, Scikit-Learn, and PyTorch libraries R: Tidyverse libraries Version Control: Git and GitHub Neuroimaging: Nilearn, FSL, BIDS, fMRIprep, and ASLprep softwares	3 2 3 3
Computing	High Performance Computing: PBS and SLURM resource managers Cloud Computing: Amazon Web Services (AWS) S3 and EC2 Reproducibility: Docker and Singularity containers	2 2 2
Packaging	Deployment: PyPI and conda forge Documentation: Sphinx, Read the Docs Testing/CI: Pytest, GitHub Actions	1 1 3
Clinical	MRI/EEG: GE and Siemens scanner operation, and BrainVision neurosignal recording Physiology: Biopac biosignal recording Clinical Procedures: quantitative sensory pain testing and straight leg raise test of nerve pain	3 3 3
UI/UX	Software: Adobe and Affinity for raster and vector graphics Web Design: HTML and CSS for static websites	3 2
PUBLICATIONS	access papers on google scholar	
2025	Estimating fMRI timescale maps G Rieger, S Davenport, B Voytek, A Schwartzman. <i>bioRxiv</i> [code]	
2025	Mindfulness meditation and placebo modulate distinct multivariate neural signatures to reduce pain G Rieger, J Dean, T Wager, F Zeidan. <i>Biological Psychiatry</i> [code] [press release] [commentary article]	
2024	Self-regulated analgesia in males but not females is mediated by endogenous opioids J Dean, M Reyes, V Oliva, L Khatib, G Rieger, et al. <i>PNAS Nexus</i> [press release]	
2024	I feel your pain: higher empathy is associated with higher posterior default mode network activity V Oliva, G Rieger, J Dean, L Khatib, et al. <i>PAIN</i>	
2023	The role of endogenous opioids in mindfulness and sham-mindfulness meditation for the direct alleviation of evoked chronic low back pain: a randomized clinical trial L Khatib, J Dean, V Oliva, G Rieger, et al. <i>Nature Neuropsychopharmacology</i>	
2023	Neural and psychological mechanisms in the relationship between resting breathing rate and pain V Oliva, J Baumgartner, S Farris, G Rieger, et al. <i>Mindfulness</i>	
2022	Disentangling self from pain: mindfulness meditation-induced pain relief is driven by thalamic-default mode network decoupling G Rieger, G Posey, V Oliva, Y Jung, et al. <i>PAIN, selected as editor's choice</i> [press release]	
CONFERENCES		
2025	Time series and neuroscience: estimating fMRI timescale maps <i>Western North American Region of the International Biometric Society</i> [slides]	
2022	Mindfulness-meditation effects on fMRI pain signatures of nociception, negative affect, and placebo <i>Society for Neuroscience</i> [poster]	
2022	Meditation effects sensory but not extra-sensory cerebral pain signatures <i>US Association for the Study of Pain</i>	
2021	Neurofunctional connections supporting mindfulness-based pain relief <i>Society for Neuroscience</i> [slides]	
ADVISING		
2024 - 2025	Data Science Capstone: Jennifer Hung, Judel Ancayan, Sahana Narayanan [project]	
2024 - 2025	Data Science Capstone: Vicky Li, Anastasiya Markova, Zhuoxuan Ju [project]	
2023 - 2024	Honors thesis: Milka Waniak [thesis]	
2023 - 2024	Data Science Capstone: Daphne Fabella, Daniel Zhang, Terho Koivisto, Andrew Cheng [project]	

SCHOLARSHIP

2022 UCSD Competitive Edge Program: summer research stipend
2015 - 2019 USC Tuition Exchange Scholarship: 80% tuition covered