Srinivas Gorur-Shandilya

Senior Computational Neuroscientist at Inscopix Inc.
me@srinivas.gs
linkedin.com/in/srinivasgs
https://srinivas.gs

Education

2017 — Ph.D. in Neuroscience
Yale University, USA

2010 — M.Sc. in Neuroscience
Georg-August-Universität Göttingen, Germany

2008 — B.Sc. in Physics, Chemistry and Mathematics
St. Stephen's College, University of Delhi, India

Professional Experience

2021– — Senior Computational Neuroscientist, Inscopix Inc. (now part of Bruker)
data scientist and scientific programmer working on software tool development

2018–2021 — NRSA Postdoctoral Fellow, Brandeis University, USA
Advisor: Eve Marder

2017–2018 — Postdoctoral Associate, Brandeis University, USA
Advisor: Eve Marder

2010–2017 — Doctoral student at Yale University, USA
Advisor: Thierry Emonet

2009–2010 — Research Fellow at the Max Planck Institute for Nonlinear Dynamics and Self-Organisation, Göttingen, Germany
Advisor: Marc Timme

Professional Activities and Awards

invited reviewer for: *Scientific Reports,*
New Journal of Physics,
Brain Sciences,
Europhysics Letters,
Frontiers in Neural Circuits and
International Journal of Molecular Sciences

2019 Accepted into the Junior Scientist Workshop on Theoretical Neuroscience, Howard Hughes Medical Institute, USA

2018 Named Distinguished Referee by the European Physical Society

2016 Presenters' Travel Grant, Cosyne, USA

2015 Conference Travel Fellowship, Graduate Student Assembly, Yale University, USA

2011–2013 Anne S. And William H. Macmillan Fellowship, Yale University, USA

2012 Editor's selection in "Highlights of 2011" for first-author paper in *New Journal of Physics*

2009–2010 Research Fellowship, Max Plank Society, Germany

2008–2009 Fellowship from the Excellence Foundation for the Promotion of the Max Planck Society, Max Plank Society.
Tuition and living expenses at the University of Göttingen, Germany. One of 10 Fellows selected by worldwide competition.

2005–2008 KVPY Fellowship, The Department of Science and Technology, India.
One of 89 Fellows selected by nationwide competition out of ~100,000 applicants.

Peer-reviewed Publications

up to date list at https://srinivas.gs/publications/

2022 Ren M., Yang Y., Heng K.H.Y., Ng L.Y., Chong C.Y-Y., Ng Y.T., **Gorur-Shandilya S.**, Lee R.M.Q, Lim K.L., Zhang J. & Tong-Wey Koh T-W.
MED13 and glycolysis are conserved modifiers of α-synuclein-associated neurodegeneration *Cell Reports* **41.12**:111852.

2022 **Gorur-Shandilya, S.**, Cronin, M.E., Schneider, A.C., Haddad, S.A., Rosenbaum P., Bucher, D., Nadim, F., & Marder E.
Mapping circuit dynamics during function and dysfunction. *eLife* **11**:e76579.

2021 Powell, D.†, Haddad, S.†, **Gorur-Shandilya, S.**†, & Marder E. Coupling between fast and slow oscillator circuits in *Cancer borealis* is temperature compensated. *eLife* 10: e60454. († = equal contribution)

2020 **Gorur-Shandilya, S.**, Marder, E. & O'Leary, T. Activity-dependent compensation of cell size is vulnerable to targeted deletion of ion channels. *Scientific Reports* 10**,** 15989

2019 **Gorur-Shandilya**, **S**., Martelli, C., Demir, M., & Emonet, T. Controlling and measuring dynamic odorant stimuli in the laboratory. *Journal of Experimental Biology*, 222(23), 207787

2018 **Gorur-Shandilya, S.**†, Hoyland, A.†, & Marder, E. Xolotl: an intuitive and approachable neuron and network simulator for research and teaching. *Frontiers in neuroinformatics*, 12(87) († = equal contribution)

2018 Bronk, P., Kuklin, E. A., **Gorur-Shandilya, S.**, Liu, C., Wiggin, T. D., Reed, M. L., Marder, E. & Griffith, L. C. Regulation of EAG by Ca^{2+}/calmodulin controls presynaptic excitability in *Drosophila*. *Journal of neurophysiology*, 119(5):1665-1680.

2017 **Gorur-Shandilya, S**.†, Demir, M.†, Long, J., Clark, D. A., & Emonet, T. Olfactory receptor neurons use gain control and complementary kinetics to encode intermittent odorant stimuli. *eLife*, *6*, e27670 († = equal contribution)

2016 Raccuglia, D., McCurdy, L. Y., Demir, M., **Gorur-Shandilya, S.**, Kunst, M., Emonet, T., & Nitabach, M. N. Presynaptic GABA receptors mediate temporal contrast enhancement in *Drosophila* olfactory sensory neurons and modulate odor-driven behavioral kinetics. *ENeuro*, 3(4)

2014 200+ citations Koh, T. W., He, Z., **Gorur-Shandilya, S.,** Menuz, K., Larter, N. K., Stewart, S., & Carlson, J. R. The *Drosophila* IR20a clade of ionotropic receptors are candidate taste and pheromone receptors. *Neuron*, 83(4):850-865

2011 150+ citations **Shandilya, S. G.**, & Timme, M. Inferring network topology from complex dynamics. *New Journal of Physics*, 13(1), 013004

Extramural Talks and Public Lectures

2021 "Mapping the structure of circuit dynamics during function and dysfunction". invited talk at Google Connectomics

2021 "Mapping the structure of circuit dynamics during function and dysfunction". job talk at Inscopix, Inc.

2020 "Modeling and visualizing neural circuit dynamics". job talk at Harvard Research Computing

2020 "Mapping the structure of circuit dynamics during function and dysfunction". Annual meeting of the Stomatogastric Ganglion.

2020 "Mapping the structure of circuit dynamics during function and dysfunction". Accepted talk at the Simons Collaboration on the Global Brain, Boston, USA.

2019 "The self-tuning neuron: how homeostasis can compensate for size changes". Invited talk at the Physics of Living Systems Seminar Series, MIT, USA.

2019 "Homeostasis in neuron models and implications for size compensation". Invited seminar at the Allen Center for Discovery, Tufts University, USA.

2016 "Sequential gain control in *Drosophila* olfactory receptor neurons." Accepted talk at Sense2Synapse, New York, USA.

2015 "Topology Predicts Dynamics; Dynamics Constrain Topology." Invited talk at SIAM Conference on Applications of Dynamical Systems (DS15), Snowbird, USA.

2013 "Why is anything the way it is?" Accepted lightning talk at the 30th Chaos Communication Congress (30C3), Hamburg, Germany.

Additional Training

2018 1 of 20 accepted into the Quantitative Approaches to Behavior Summer School under the Cajal Advanced Neuroscience Training Program, Lisbon, Portugal

2019 Accepted into the Junior Scientist Workshop on Theoretical Neuroscience, Howard Hughes Medical Institute, USA

Teaching and Mentorship

Teaching

2021 Instructor at the Brandeis Quantitative Biology Research Community

designed curriculum and software for a 12-week research program for undergraduates and taught 3-hr classes a week. Mentored four undergraduates.

brandeis.edu/qbrec/

2020 Visual Display of Quantitative Information Workshop, Brandeis University

created and ran a workshop on best practices in the visual display of data

brandeis.edu/science-communications-lab/workshops

2020 Developed custom pedagogical software for NBIO140, Brandeis University, together with Prof. Steven van Hooser

2019-2021 Fellow at the Scientific Communication Laboratory, Brandeis University.

Train scientists (at all stages: undergraduate - faculty) in one-on-one sessions to improve written and oral presentations.

brandeis.edu/science-communications-lab/commlab-fellows

2019 Guest lecturer, NBIO 148, Brandeis University, for Prof. Sacha Nelson

created custom software for students to interactively manipulate neurons and taught a class on the principles of the Hodgkin-Huxley model in neuroscience

2015 Organized and taught a workshop on encryption and cryptography at the Center for Engineering Innovation and Design, Yale University.

2014 Teaching Fellow for Dynamical Systems in Biology (MCDB 361) at Yale University, taught by Profs. Emonet, Clark and Howard.

2010 Teaching Fellow for Neurobiology (MCDB 320a) at Yale University, taught by Profs. Keshishian and Forscher.

Mentorship

2019–2020 Robert Tromm, B.Sc. student, Brandeis University.

2017–2018 Alec Hoyland, M.Sc. student, Brandeis University.

Selected Projects & Code

Open Source Software

`xolotl` a fast and easy-to-use neuron and network simulator

github.com/sg-s/xolotl

`crabsort` a general-purpose multi-channel extracellular spike sorter that uses neural nets to classify spikes and active learning to update predictions

github.com/sg-s/crabsort

`condalab` transparent interface to use Anaconda from within MATLAB
github.com/sg-s/condalab

`cpplab` toolbox that allows C++ classes to be natively used in MATLAB

github.com/sg-s/cpplab

`puppeteer` MATLAB class to interactively manipulate functions and classes

github.com/sg-s/puppeteer

Programming Languages

MATLAB 15+ years, 68,000+ lines of code

parallelism, OOP, toolbox development, mex & C++ interfaces.

C++ 10+ years, 19,000+ lines of code

	multi-threading, OOP, templates
Python	7+ years, 15,000+ lines of code
	OOP, toolbox development, pandas, numpy, bokeh, plotly, streamlit, django
Julia	2+ years, 1000+ lines of code

Other projects and code available at github.com/sg-s/

References

Eve Marder, PhD
marder@brandeis.edu

Thierry Emonet, PhD
thierry.emonet@yale.edu

Damon A. Clark, PhD
damon.clark@yale.edu