RyanVThorpe

ryan_thorpe@brown.edu github.com/rythorpe google scholar
computational neuroscientist | neural dynamics ↔ sensory processing

education

2019 → present **PhD** in Neuroscience — Brown University
ICoN T32 Trainee. Sheridan Teaching Certificate I. GPA: 4.0. Advisors: S. R. Jones & C. I. Moore.

2017 → 2019 **ScM** in Biomedical Engineering — Brown University
Thesis: *Charcterizing M/EEG measures of pain through biophysically-principled neuromodeling and spectral event analysis.* GPA: 3.5. Advisors: D. A. Borton & S. R. Jones.

2011 → 2016 **BS** in Bioengineering — Walla Walla University
Minor in Physics. GPA: 3.4. Advisor: J. L. McKenzie.

publications

neural dynamics of innocuous vs noxious somatosensory processing

Distinct neocortical mechanisms underlie human SI responses to median nerve and laser evoked peripheral activation
Thorpe, R.V., Black, C.J., Borton, D.A., Hu, L., Saab, C.Y., & Jones, S.R. *bioRxiv*, 2021

spectral-event analysis

Age-related differences in transient gamma band activity during working memory maintenance through adolescence
McKeon, S.D., Calabro, F., **Thorpe, R.V.**, ... Jones, S.R., & Luna, B. *NeuroImage*, 2023

Fronto-central resting-state 15-29 Hz transient beta events change with therapeutic transcranial magnetic stimulation for posttraumatic stress disorder and major depressive disorder
Morris, A.T., Temereanca, S., Zandvakili, A., **Thorpe, R.**, ... & Jones, S.R. *Scientific Reports*, 2023

Pain phenotypes classified by machine learning using electroencephalography features
Levitt, J., Edhi, M.M., **Thorpe, R.V.**, ... Borton, D.A., Jones, S.R., & Saab, C.Y. *NeuroImage*, 2020

presentations

2022 **poster** — Society for Neuroscience Annual Meeting, San Diego, California
HNN-core: an open-source Python interface to the Human Neocortical Neurosolver (HNN) software for cellular and microcircuit interpretation of human MEG and EEG signals, by **Thorpe, R.V.**, Jas, M., Tolley, N., Bailey, C.J., Caldwell, B., Cheng, H., Sherif, M.A., Hämäläinen, M. & Jones, S.R.

2022 **tutorial** — BIOMAG International Conference, University of Birmingham
Hands-on workshop on Human Neocortical Neurosolver: a new tool for cell and circuit level interpretation of MEG/EEG signals, by Jones, S.R., Jas, M., Tolley, N., & **Thorpe, R.V.**

2022 **tutorial*** — BRAINSTORM Data Challenge event, Carney Institute for Brain Science, Brown University
Using Spectral Event Analysis to characterize shifts in resting-state neural timeseries data, by **Thorpe, R.V.**

2021 **poster** — Society for Neuroscience Annual Meeting (virtual)
Distinct neocortical mechanisms underlie human SI responses to median nerve and laser evoked peripheral activation examined with the Human Neocortical Neurosolver modeling tool, by **Thorpe, R.V.**, Black, C.J., Borton, D.A., Hu, L., Saab, C.Y., & Jones, S.R.

2021 **tutorial** — CuttingEEG Annual Symposium, Le Cube Université Aix-Marseille (virtual)
Human Neocortical Neurosolver (HNN) workshop, by Jones, S.R., Jas, M., **Thorpe, R.V.**, & Tolley, N.

2018 **poster** Society for Neuroscience Annual Meeting, San Diego, California
Characterization of circuit mechanisms underlying discriminatory EEG neural markers for pain perception in somatosensory cortex, by **Thorpe, R.V.**, Black, C.J., Neymotin, S.A., Saab, C.Y., Borton, D.A., & Jones, S.R.

2016 **lecture** Walla Walla University Academic Symposium, College Place, Washington
Design and optimization of machines for biomaterials and tissue engineering applications, by **Thorpe, R.V.**, Stirling, R.L., & McKenzie, J.L.

2015 **poster** Murdock CSRP Conference, Vancouver, Washington
Design and construction of a modular perfusion bioreactor for tissue culture, by Hissong, T.B., **Thorpe, R.V.**, Stirling, R.L., & McKenzie, J.L.

software contributions

hnn-core — neural simulator based on NEURON+Python [contributor/maintainer: 321 commits, 4,890 lines]
hnn — GUI-centric neural simulator based on NEURON+Python [contributor: 11 commits, 72 lines]
SpectralEvents — Matlab/Python toolbox for spectral event analysis [contributor/maintainer: 92 commits, 6,950 lines]

teaching & leadership appointments

2022 **teaching assistant** Dept. of Neuroscience, Brown University
Mechanisms & Meaning of Neural Dynamics course

2022 **section co-leader** Dept. of Neuroscience, Brown University
Neuroscience Graduate Program Neuropracticum

2021 → 2022 **peer mentor** Dept. of Neuroscience, Brown University
Neuroscience Graduate Program

2021 **guest lecturer** Dept. of Neuroscience, Brown University
Mechanisms & Meaning of Neural Dynamics course: *The circuit origin of neural gamma oscillations*

2020 **teaching assistant** Dept. of Neuroscience, Brown University
Mechanisms & Meaning of Neural Dynamics course

2020 **program co-organizer** Dept. of Neuroscience, Brown University
Neuroscience Graduate Program Fall Retreat

2018 → 2019 **peer mentor** School of Engineering, Brown University
Biomedical Engineering Master's Program

2018 **tutor** Hope High School, Providence, RI
high school math

2016 **teaching assistant** Dept. of Physics, Walla Walla University
Principles of Physics course (lab section)

2015 → 2016 **elected social club officer** Walla Walla University
Vice President of the Biology Club

2015 **college newspaper columnist** Walla Walla University
Science & Technology section of *The Collegian*

2013 → 2014 **teacher** Kosrae SDA School, Kosrae, Federated States of Micronesia
5th and 6th grade, all subjects

2012 → 2013 **teaching assistant** Rogers Adventist School, College Place, WA
middle school math

2011 → 2012 **teaching assistant** Dept. of Mathematics, Walla Walla University
algebra II, pre-calculus, & calculus I

mentorship

2023 (summer) **co-mentor** Google Summer of Code, Jones Lab / INCF
Carolina Fernandez. Project: *Generalize parameter optimization routines*

2023 (summer) **co-mentor** Google Summer of Code, Jones Lab / INCF
Rajat Partani. Project: *Develop IO Routines for HNN-core outputs*

2022 (summer) **co-mentor** Google Summer of Code, Jones Lab / INCF
Huzi Cheng. Project: *A GUI for HNN-core with ipywidgets and the calculation and visualization of CSD signals*

2022 (summer) **primary mentor** The Leadership Alliance SREIP, Brown University
Mattan Pelah. Project: *Simulating the cellular and circuit dynamics of current source density measurements using the Human Neocortical Neurosolver*

awards & fellowships

2021 → 2023 **ICoN T32 Traineeship** Carney Institute for Brain Science, Brown University
Interdisciplinary training in Computational, Cognitive, and Systems Neuroscience

2022 **1^{st} place in BRAINSTORM Data Challenge** [$2,000] Carney Institute for Brain Science, Brown University

2011 → 2016 **WWU Achievement Scholarship** [$36,000] Walla Walla University

2015 → 2016 **Engineering Scholarship** [$750] School of Engineering, Walla Walla University

2012 → 2013 **Stanley Lloyd Scholarship** [$1,000] Walla Walla University

2012 → 2013 **NPUC Grant** [$600] Walla Walla University

2011 → 2012 **Leadership Award** [$2,250] Walla Walla University

*invited presentation