PAVAN CHAGGAR

DPhil Student ⋄ Mathematical Institute ⋄ University of Oxford
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EDUCATION

University of Oxford, DPhil, Mathematical Institute *2019 — 2023*
Provisional Title: Data-Driven Mathematical Modelling of Neurodegeneration
Academic Advisor: Alain Goriely, Saad Jbabdi
Industrial Advisor: Stefano Magon (Roche), Gregory Klein (Roche)
Funding: EPSRC CDT for Sustainable Approaches to Biomedical Sciences

University College London, M.Sc in Neuroscience *2018 — 2019*
Merit with Distinction in thesis
Thesis Advisor: Maria Chain, Karl Friston, Gareth Barnes

King's College London, B.Sc in Biomedical Sciences *2012 — 2016*
Upper Second Class Honors
Thesis Advisor: Clive Coen

RESEARCH INTERESTS

Differential equations, dynamics, probablistic inference, scientific machine learning, neurodegenerative disease, neuroscience

PUBLICATIONS

Prama Putra, Travis B Thompson, and Alain Goriely. Braiding braak and braak: Staging patterns and model selection in network neurodegeneration. *bioRxiv*, 2021 (In preparation)

Travis B Thompson, Pavanjit Chaggar, Ellen Kuhl, Alain Goriely, Alzheimer's Disease Neuroimaging Initiative, et al. Protein-protein interactions in neurodegenerative diseases: A conspiracy theory. *PLoS computational biology*, 16(10):e1008267, 2020

CONFERENCE PRESENTATIONS

Pavanjit Chaggar. Pryon: Proteopathy modelling on connectomes with python. International Brain Mechanics and Trauma Workshop, April 2021

Roberta Bianco, Pavanjit Chaggar, Rosemary Southwell, Sven Bestmann, Gareth Barnes, and Maria Chait. A brain network of temporo-frontal areas supports pattern detection in rapid sound sequences. Advances and Perspectives in Auditory Neuroscience, August 2020

INVITED TALKS

Analysing ADNI sMRI and PET data with SPM. Presented at the UCL Wellcome Trust Centre for Neuroimaging Methods Seminar, July 2020

Optimising MEG source localisation of hippocampal regions. Presented at the UCL Wellcome Trust Centre for Neuroimaging MEG Seminar, July 2019

SOFTWARE

NetworkInference (in preparation)
Package for performing Bayesian Inference (variational and sampling methods) for differential equation problems on graphs. Python and Julia.

Pryon (in preparation)
Scientific computing software for efficiently solving high dimensional non-linear ordinary differential equations on graphs. C++ and Python.

ECIQC
Automated quality control and validation for medical imaging data. C++. https://github.com/Extensible-Clinical-Imaging-QC-Tool/ECIQC.

Paint4Brains
Machine learning tool for fast and accurate segmentation of degenerated brains. Python. https://github.com/SABS-R3-projects/Paint4Brains.

TEACHING

Software Engineering *2020-2021*
Doctoral Training Center, University of Oxford

Mathematical Modelling and Scientific Computing *Feb 2021*
Doctoral Training Center, University of Oxford