

# GRISHA SZEPE

## PERSONAL INFORMATION

*github* [github.com/gszep](https://github.com/gszep)  
*email* [gregory.szep@gmail.com](mailto:gregory.szep@gmail.com)  
*phone* +44 7956 329010

## EDUCATION

*Biophysics & Machine Learning Doctorate*  
09/2017 - 03/2022 University of London, King's College  
PhD · Randall Division of Cell & Molecular Biophysics  
Building novel machine learning algorithms for the inference of state-space structures in dynamical systems, with applications in developmental and synthetic biology. Writing software in Python and Julia in collaboration with Station B at Microsoft Research Cambridge. Published works in NeurIPS Proceedings, Natural Computing, Nature Comms and JuliaCon. Attila CSIKÁSZ-NAGY · [attila.csikasz-nagy@kcl.ac.uk](mailto:attila.csikasz-nagy@kcl.ac.uk) Neil DALCHAU · [ndalchau@microsoft.com](mailto:ndalchau@microsoft.com)

*Physics Masters*  
09/2011 - 05/2015 University of London, King's College  
First Class · *Physics MSci* · School of Natural & Mathematical Science  
Focus on non-equilibrium statistical mechanics, information theory and complex networks. Masters project involved using the Keldysh formalism to investigate angular dependence of molecular current-voltage characteristics.  
Project Supervisor: Prof. Lev KANTOROVICH · [lev.kantorovich@kcl.ac.uk](mailto:lev.kantorovich@kcl.ac.uk)

*Exchange Year*  
08/2013 - 06/2014 University of California, Berkeley  
GPA: 3.7 · *Physics Major* · College of Letters & Science  
Attended lectures at the Redwood Center for Theoretical Neuroscience. Expanded knowledge on analytical mechanics, special relativity, solid state physics and machine learning. Duration of stay motivated academic path and insight into different academic and industrial cultures.  
Study Abroad Tutor: Nicola BONINI · [nicola.bonini@kcl.ac.uk](mailto:nicola.bonini@kcl.ac.uk)

## WORK EXPERIENCE

*Microsoft*  
09/2017 - 09/2021 Research Studentship, CAMBRIDGE  
Our aim was to build a new platform for biological programming which would help industry partners, like Oxford Biomedica, scale their efforts to design, build and test bio-manufacturing pipelines. Developed expertise with single cell multi-omics datasets: proteomics (MS/MS), transcriptomics (scRNA-seq) and metabolomics (MS) and flow cytometry data.  
Supervisor: Neil DALCHAU · [ndalchau@microsoft.com](mailto:ndalchau@microsoft.com)

*Flux*  
11/2019 - 12/2020 Data Scientist, LONDON  
Delivering business intelligence and consumer analytics on receipt-level transaction data to merchant partners. Applied machine learning with Scala, Python and PostgreSQL; building tools for A/B testing and actionable reports.  
Chief Executive Officer: Matty CUSDON-ROSS · [matty@tryflux.com](mailto:matty@tryflux.com)

*Birds.ai*  
11/2016 - 11/2017 Research Engineer, DELFT  
Development and maintenance of drone image analysis pipeline for agricultural surveillance and industrial inspection. Applied machine learning techniques - convolutional neural networks - and learned how to deploy scalable and secure web applications using Amazon Web Services.  
Chief Executive Officer: Camiel VERSCHOOR · [camiel@birds.ai](mailto:camiel@birds.ai)

<i>Institute of Science and Technology</i>	09/2015 - 11/2016      Graduate Researcher, VIENNA Rotations in cell migration and biochemistry groups lead to investigation of non-equilibrium responses of Lamellipodial Actin and in vitro reconstituted FtsZ:FtsA vortices. Used Kinetic Monte-Carlo and deterministic rate equation approaches to model actin polymerisation. Published works in Cell Press. Dr. Med. Michael SIXT · <a href="mailto:msixt@ist.ac.at">msixt@ist.ac.at</a> Prof. Karsten KRUSE · <a href="mailto:k.kruse@physik.uni-saarland.de">k.kruse@physik.uni-saarland.de</a>
<i>NASA Ames Research Centre</i>	07/2014 - 09/2015      Research Intern, NASA AMES SILICON VALLEY Coding of unsupervised machine learning algorithms to classify sleep stages on high resolution single channel electroencephalogram (EEG) recordings. Extraction of biomarkers related to neurophysiological disorders and development of communication software. Chief Executive Officer: Dr Philip Low · <a href="mailto:philip@neurovigil.com">philip@neurovigil.com</a>
<i>King's College London</i>	06/2013 - 08/2013      Research Studentship, KING'S COLLEGE LONDON Simulation of photon transport in random lasing process. Collection and analysis of data from experiment. Presentation of findings and evaluation as member of research team. Research Supervisor: Dr Riccardo SAPIENZA · <a href="mailto:riccardo.sapienza@kcl.ac.uk">riccardo.sapienza@kcl.ac.uk</a>
<i>Camden Market</i>	Sep-Dec 2012      Market Stall Owner, CAMDEN MARKET Managing market stall in tourist area of north London selling 3D IQ puzzles made of wood and bamboo. Creative presentation and sales to young and old audiences. Financial planning. Supplier Contact: Ben MELDRUM · <a href="mailto:ben@professorpuzzle.com">ben@professorpuzzle.com</a>

#### COMPUTER SKILLS

<i>Intermediate</i>	AWS, Scala, Continuous Integration, C++, PostgreSQL, Lua, Wolfram Mathematica
<i>Advanced</i>	Latex, Git, Linux Server Administration, NodeJs, Python, Julia, D3.js, WebGL
<i>Datasets</i>	Flow Cytometry, Proteomics (MS/MS). Transcriptomics (sc-RNASeq), Metabolomics (MS)

#### LANGUAGES

<i>Intermediate</i>	Russian, French
<i>Advanced</i>	English, German

#### WORKS

<i>Published</i>	Szep, G. et al. 2021. Advances in Neural Information Processing Systems Parameter Inference with Bifurcation Diagrams.  Peruzzo, M., Hassani, F. & Szep, G. et al. 2021. Physical Review X: Quantum Geometric superinductance qubits.  Grant, P. & Szep, G. et al. 2020. Nature Communications 11 (1), 1-8 Interpretation of morphogen gradients by a synthetic bistable circuit.  Dalchau, N. & Szep, G. et al. 2018. Natural computing 17 (4), 761-779 Computing with biological switches and clocks.  Müller, J. & Szep, G. et al. 2016. Cell 171 (1), 188-200. e16 Load-adaptation of lamellipodial actin networks.
<i>In Preparation</i>	Coppard, V. & Szep, G. et al. 2021. Nature Methods: Brief Communications FlowAtlas.jl : an interactive tool bridging FlowJo and computational tools in Julia.

*Conferences*

FlowAtlas.jl : an interactive tool bridging FlowJo and computational tools in Julia.  
 JuliaCon 2021. [youtu.be/FeYrFKgP91s](https://youtu.be/FeYrFKgP91s)

Inference of Bifurcations with Differentiable Continuation.  
 JuliaCon 2020. [youtu.be/vp-206RgeVE](https://youtu.be/vp-206RgeVE)

2019. Quantitative Systems Biology Workshop. London. Organisation Committee

2019. Bioinspired analysis of dynamical systems, Hungary. Talk

2018. EMBL Symposium: Biological Oscillators, Heidelberg. Poster

**AWARDS & QUALIFICATIONS***Awards*

2018 · Microsoft Research PhD Scholarship

2014 · Study Abroad Student Award – King’s College London

2013 · The Gordon Rogers Scholarship - Top 5 Performing Students

2013 · Andrewes Prize - Best Examination Performance

2012 · Dillon Prize - Best Examination Performance

*Qualifications*

2016 · Electron Microscope Training - Institute of Science & Technology

2013 · Basic Laser Safety Certificate - King’s College London

2012 · Kids Ski Instructor Certificate - Swiss Snowsports

January 10, 2022