

Simon RO Nilsson, PhD

• sronilsson@gmail.com • github.com/sronilsson • linkedin.com/in/sronilsson • Nationality: Swedish (Green Card) • +1 203-444-6821

SKILLS

- **Programming:** Python (6 years), SQL (2 years), R (1 year), Basic (C++, MATLAB). Packages: RAPIDS, OpenCV, scikit, numba/numpy, TF, SQLite etc.
- **Statistics:** Signal detection theory, linear models in statistics, Bayesian methods, analysis of variance, non-parametric tests, data transformation methods, correlation coefficients, probability distributions, frequentist statistics.
- **Machine learning:** CV (pose-estimation, detection, segmentation), supervised methods (RF, GBC, KNN, SVM, NN's), balancing methods, evaluations methods, dimensionality reduction, anomaly detection methods, clustering, and ML explainability.

EXPERIENCE

Principal AI researcher 01/22-present

Deep Labs Inc, San Francisco, CA (Remote)

- Leading data scientists / researchers in migrating to scalable statistical methods and unsupervised ML solutions using financial data.
- Documenting and presenting results and recommendations to c-suit, clients, and allhands.
- Producing streaming ML pipelines (i.e., <10ms runtimes) for detecting first/third-party fraud, money mules and fraud rings in transaction data.

Senior AI researcher 10/20-01/22

Deep Labs Inc.

- Unsupervised modeling of geospatial and temporal data (e.g., H3, SHAP, shapely, UMAP, kepler.gl, HDBSCAN, wavelets, **saved client >\$60m**).
- Network analyses (e.g., SNAP, cuGraph, networkx), temporal motifs (e.g., Gibbs sampling), sentiment analysis (e.g., GDELT).
- Dashboards (Plotly/Dash) and interactive visualizations (Mayavi, Pyvista, VTK, Blender).
- Big data supervised/unsupervised fit and transforms (numba, cuML, pyspark, cupy, sqlite), regression/unit tests (pytest), documentation (sphinx).
- Spatial and temporal autocorrelations and scraping (selenium, BeautifulSoup, Wikipedia).

Sr. Postdoctoral researcher, Dep. of Biological Structure 01/19-10/20

University of Washington Medical Center, Seattle, WA

- Developed/maintained open-source ML pipeline for behavioral classification in video feeds. Downloads > 500k. [Link to GitHub repo](#). [Link to article](#).
- Create GUIs (tkinter, qt designer, pyqt). Manage open-source support forums with 200+ users. [Link to support forum example](#).
- Set-up ML core for analyzing video data at [UW NAPE Center](#) (e.g., pose-estimation/scikit/optical flow/mask RCNNs/YOLO).
- Promote explainable ML in neuroscience and behavioral analyses. [Link to article](#). [Link to presentation deck](#). [Example article 1](#). [Example article 2](#).
- Aligning ML data with brain recordings, cellular manipulations, and microscopy data.
- Piloting wearables to detect and intervene at suicidal ideation.

Research Scientist, NYU Neuroscience Institute 11/15-01/19

NYU Langone Medical Center, New York City, NY

- Developed CLI's for querying SQL and Microsoft databases containing behavioral and neural data. [GitHub repo 1 link](#).
- Developed python versions of proprietary cognitive testing tools for rodents: [GitHub repo 2 link](#).
- Design/manufacture of preclinical neuroscience equipment using microcontrollers, C++, python, 3D printing. [GitHub repo 3 link](#).

Research Associate, Department of Experimental Psychology 06/12-11/15

University of Cambridge, Cambridge, UK

- Worked in large EU academic-industrial consortium ([NEWMEDS](#)) focused on pharmacological treatments for schizophrenia and depression.
- Published 17 peer-reviewed articles related to psychopharmacology, genetics, reinforcement learning, attention, and memory.

EDUCATION

PhD, Behavioral Neuroscience 08/08-06/12

Industrial scholarship Eli Lilly Ltd, London, UK / University of Sussex, Brighton, UK

- Produced 3 peer-reviewed research articles and 1 book chapter.
- Positive / negative reinforcement, reward prediction error, attention, reward omission, learning theory. [Link to example publication](#).
- [Link to PhD thesis](#)

BSc, Psychology w/ Neuroscience 09/05-08/08

University of Sussex, Brighton, UK

- Winner of The British Psychological Society Undergraduate Award for Best Overall Degree Performance.
- Highest final grade in Psychology for at least the last 5 cohorts (each cohort ~200 students).
- Winner of The Stuart Sutherland Prize for an Outstanding Third Year Project. [Link to article](#).
- Coursework included statistics, reinforcement learning, perception and signal transduction, neural networks, learning and memory, g factor.

ADDITIONAL

- Awarded research grant from [UW NAPE Center](#) to set-up small ML core facility – 01/20.
- Authored 30+ papers to date: [Link to list of publications](#).
- Awarded [NVIDIA Accelerated Data Science Research Grant](#) – 11/19.
- Presented at dozens of neuroscience and psychology conferences in US/EU. [Link to collated posters and presentations](#).
- Presented or chaired meetings on ML in neuroscience at e.g., [Chicago 2019](#), [Colorado 2022](#), [Lund Sweden 2021](#), [Braga Portugal 2019](#).
- Supervised many PhD/MSc/BSc level students.