Neil Scheidwasser-Clow

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Education

University of Copenhagen — Copenhagen, Denmark

PhD Fellow, Department of Public Health, Section of Epidemiology — *2022 –*

- **Project title:** *Beyond genetic sequences: protein structure based and multimodal approaches for phylogenetic inference*
- **Supervisor:** Samir Bhatt
- Member of the Steering Group of the Public Health and Epidemiology Graduate Programme

EPFL — Lausanne, Switzerland

MSc in Life Sciences Engineering (Distinction), Minor: Computational neurosciences — *2019 – 2022*

- **Relevant coursework:** Machine learning, Deep learning, Applied data analysis Controlling behavior in animals and robots, In silico neuroscience
- **Master's thesis:** *Analytical approaches to data from human virtual reality (VR) and neuro-physiology studies*
- **Supervisor:** Carmen Sandi

KTH Royal Institute of Technology — Stockholm, Sweden

Swiss European Mobility Programme – 3rd year Bachelor exchange — *2018 – 2019*

EPFL — Lausanne, Switzerland

BSc in Life Sciences Engineering — *2016 – 2019*

Experience

Logitech — Lausanne, Switzerland

Scientific advisor — *Sep. 2021 – Feb. 2023*

- Assisting interns for projects on deep-learning based speech representations

Engineering intern, CTO office — *Feb. 2021 – Aug. 2021*

- **Project:** Paralinguistic analysis of speech and non-speech audio signals
- Prepared software and submissions for INTERSPEECH and ICASSP
- Designed experiments to record speech under cognitive and physical load conditions

EPFL — Lausanne, Switzerland

Research engineer — *Feb. 2022 – Sep. 2022*

- Master enhancement internship at the Behavioral Genetics lab: extending the analysis of my Master's thesis for a publication
- Design of a GUI to facilitate post-processing of data from DeepLabCut (kinematics) and fiber photometry for behavioral tests in rodents.
- Audio feature extraction from video recordings from Trier Social Stress Test experiments

Student research assistant — *2019 – 2021*

- 2020-2021: Neuroengineering lab – Comparison of deep learning algorithms for 2D pose estimation of tethered flies
- 2019-2020: Psychophysics lab – Modelling the Sequential Metacontrast Paradigm with recurrent neural networks

Student teaching assistant — *2019 – 2022*

- 2021-2022: Information, Computation, Communication (CS-119)
- 2021-2022: Applied data analysis (CS-401)
- 2019-2021: Analysis III (MATH-203)
- 2019-2021: Projects in Informatics (for SV) (CS-116)

ETH Zürich — Zürich, Switzerland

Student research assistant — *Jun. 2019 – Jul. 2019*

- Neural Control of Movement lab – Event-Related Desynchronization (ERD) estimation algorithms for offline and online EEG data.

Teaching

University of Copenagen — Copenhagen, Denmark
Lecturer — *2023 –*

- 2023: Data visualisation and storytelling (PhD course; creator of the course)
- 2023: Ethics of AI (one lecture)

EPFL — Lausanne, Switzerland
Student assistant — *2019 – 2022*

- 2021-2022: Applied data analysis (CS-401)
- 2019-2021: Analysis III (MATH-203)
- 2019-2021: Projects in Informatics (for SV) (CS-116)

Private teaching — Lausanne, Switzerland
Private tutor — *2017 – 2022*

- 2022: Introduction to Programming (Python)
- 2017-2018: High school Maths and Physics

Technical Skills

Operating systems: Windows, Linux
Office automation: Microsoft Office, LaTeX
Programming languages: Python, C++, Matlab, Bash, basic knowledge of R, Julia, SQL, and Ruby
Machine learning frameworks: PyTorch, Jax, Tensorflow, Keras, scikit-learn
Audio processing: Audacity
Image processing: ImageJ
GUI design: Tkinter
Web development: Basic knowledge of Jekyll and Hugo

Languages

French, English: Native speaker
German, Danish, Swedish, Mandarin Chinese: Elementary knowledge

Publications

Leaping through tree space: continuous phylogenetic inference for rooted and unrooted trees,
Scheidwasser-Clow, N.*, Penn, M. J.*, Penn, J., Donnelly, C. A., Duchêne, D. A., & Bhatt, S.
Genome Biology and Evolution
*Equal contribution

Speaker Embeddings as Individuality Proxy for Voice Stress Detection,
Wu. Z, **Scheidwasser-Clow, N.**, El Hajal, K., & Cernak, M
Proceedings of the 24th Interspeech conference **Interspeech**, 2023

Efficient Speech Quality Assessment using Self-supervised Framewise Embeddings,
Hajal, K. E., Wu, Z., **Scheidwasser-Clow, N.**, Elbanna, G., & Cernak, M.
International Conference on Acoustics, Speech and Signal Processing **ICASSP**, 2023.

BYOL-S: Learning Self-supervised Speech Representations by Bootstrapping,
Elbanna, G., **Scheidwasser-Clow, N.**, Kegler, M., Beckmann, P., & Cernak, M.
HEAR: Holistic Evaluation of Audio Representations (NeurIPS 2021 Competition) **PMLR**, 2022.

Hybrid Handcrafted and Learnable Audio Representation for Analysis of Speech Under Cognitive and Physical Load,
Elbanna, G., Biryukov, A., **Scheidwasser-Clow, N.**, Orlandic, L., Mainar, P., Kegler, M., Beckmann, P. & Cernak, M.
Proceedings of the 23rd Interspeech conference **Interspeech**, 2022

SERAB: A multi-lingual benchmark for speech emotion recognition,
Scheidwasser-Clow, N., Kegler, M., Beckmann, P., & Cernak, M.
International Conference on Acoustics, Speech and Signal Processing **ICASSP**, 2022.

- Code: https://github.com/Neclow/SERAB
- Featured as one of the strongest submissions of the HEAR 2021 NeurIPS challenge.

Commentary: The Risky Closed Economy: A Holistic, Longitudinal Approach to Studying Fear and Anxiety in Rodents,
Scheidwasser-Clow, N., Faggella, M., Kozlova, E., & Sandi, C.
Frontiers in Behavioral Neuroscience, 2021

Preprints & upcoming publications

Phylo2Vec: a vector representation for binary trees,
Scheidwasser-Clow, N.*, Penn, M. J.*, Khurana, M. P., Duchêne, D. A., Donnelly, C. A., & Bhatt, S.
arXiv preprint arXiv:2304.12693, 2023
*Equal contribution

- Code: https://github.com/Neclow/phylo2vec

Presentations

Phylo2Vec: A vector representation of binary trees,
Scheidwasser-Clow, N.*, Penn, M. J.*, Khurana, M., Donnelly, C. A., & Bhatt, S.
2023 ICLR First Workshop on Machine Learning & Global Health.
*Equal contribution

Leaping through tree space: continuous phylogenetic inference for rooted and unrooted trees,
Scheidwasser-Clow, N.*, Penn, M. J.*, Penn, J., Donnelly, C. A., Duchêne, D. A., & Bhatt, S.
2023 Mathematics of Evolution Workshop on Algorithms and Software in Phylogenetics.
*Equal contribution

Other interests

Scrabble: Under-18 French World Scrabble Champion (2015), in world top-100 for 5 years
Sports: Football, running, bouldering, skiing, tennis, squash, padel, hiking...
Student organizations:

- Erasmus Student Network (ESN):
  - Copenhagen: commitee member (2022-2023), Event Manager (2023), Treasurer (2023-)
  - Lausanne: commitee member (2020-2022)
- Data Analytics Group (DAG) at EPFL: co-founder
  - Goal: build a strong community of students who share a passion for data science and artificial intelligence
  - 2022: Head of Communications
  - 2021: Head of Event Management
  - 2021-2022: designed 20+ coding challenges in Python (data science and basic algorithms)

Other: Chess, cooking, guitar