Curriculum Vitae

Ludvig Renbo Olsen (1991)

Education			
Research Stay	Genome Institute of Singapore	2023 (6 months)	A 6-month research stay at the [Skanderup Lab](#). Work on cancer detection from cell-free DNA.
Bioinformatics, PhD Student	Dept. of Molecular Medicine, Aarhus University	2021 - (exp. 2024)	Cancer detection from blood samples via machine learning on DNA-fragment distributions (fragmentomics). Programming-based method-development.
Cognitive Science, M.Sc. with an internship at Cercare Medical A/S (20 ECTS).	Aarhus University, Aarhus	2019 - 2021	Data science and machine learning. Thesis on the use of distributed / federated deep learning on medical imaging data from the Alzheimer's Disease Neuroimaging Initiative (ADNI). Collaboration with Cercare Medical A/S. Developed the **R packages** *xpectr* and *rearrr*.
Artificial Intelligence, M.Sc.	University of Amsterdam	2018 - 2018 Ended early.	Evolutionary Computing Multiagent Systems
Cognitive Science, B.Sc. with minor (45 ECTS) in Computer Science.	Aarhus University, Aarhus	2015 - 2018	Lots of statistics, including frequentist and Bayesian **hierarchical/multilevel models**, using R and python. **(Convolutional) neural networks** in TensorFlow as part of bachelor project. Classic machine learning as a research assistant, using scikit-learn. Course on cognitive neuroscience, including some practice with fMRI and EEG and analysis with SPM in MATLAB.

Medie- og Sonokommunikation (Media and sonic communication.)	UCSyd, Haderslev	2013 - 2014 Ended early (after 1 year).	Production of audio products, including music production and commercial audio products.
Songwriting and Electronic Music Production	Engelsholm Castle – College for Arts and Music	2012 - 2013	
Communication & English, High school - HTX (Higher Technical Exam)	Hansenberg, Kolding	2008 - 2011	Average grade: 11,5 (American system GPA[1]: 3.93)

Work

Machine Learning Specialist	Cercare Medical A/S, Aarhus	2020-2021

4 months: 30h/w (internship) 5 months: 15h/w | Computer vision on medical imaging data (CT and MRI).

I built machine learning infrastructure for stroke lesion segmentation using **PyTorch**. This included building tools for assessing the validity of training data, extending the data augmentation toolkit, handling and anonymizing DICOM files, applying deep convolutional neural networks, weight pruning, w/m. |
| Machine Learning Researcher | UNSILO, Aarhus | 2017 - 2018

~25h/w | Natural Language Processing.

I built and applied a **Tensorflow** codebase, including recurrent and convolutional neural networks for text summarization and classification.

One of my main projects was to build a dataset and a classification model for finding definitions in scientific papers, |

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			while generalizing the code for rapid future model development in a multi-GPU setup. Worked with Amazon EC2 instances.
Web designer		2009 - 2016, project based	Did websites for small local companies. Mainly used Wordpress, html and CSS. Did graphics in Adobe Photoshop and Adobe Illustrator.
Pedagogue Helper	Designbørnehuset Sanseslottet, Kolding	2011-2012	
Substitute	Dalby Mølle, Kolding	2007-2015	Packing of oatmeal and warehouse organising.
Publications			Google Scholar
Paper: Speech- and text-based classification of neuropsychiatric conditions in a multidiagnostic setting	Nature Mental Health	2023	Worked on this and related projects during my undergrad years. https://www.nature.com/articles/s44220-023-00152-7
Paper: TextDescriptives: A Python package for calculating a large variety of metrics from text	Journal of Open Source Software	2023	I've contributed to the TextDescriptives package and developed its web application on Huggingface Spaces. https://joss.theoj.org/papers/10.21105/joss.05153
Paper: The electroretinogram b-wave amplitude	Journal of neurodevelop-mental disorders	2022	I performed a cross-validation analysis. https://doi.org/10.1186/s11689-022-09440-2
Paper: Linking the Puzzle Pieces of the Past	Autism Research Wiley	2020	I built the memory game software for this study on relational memory in children with autism.

			https://doi.org/10.1002/aur.2379
Book: Practical Machine Learning with R, chapters **4** and **5**	Packt Publishing	2019	Applying neural networks and linear and logistic regression in R. Using balanced cross-validation for model selection.
R packages			Open-source software with >500k total downloads (newest metrics).
groupdata2 R package	Aarhus University, Aarhus	2016 -	groupdata2 is an R package for grouping and splitting tabular data. It has methods for dividing up the data and for creating balanced folds and partitions, e.g. for cross-validation. It is well-documented and comes with multiple tutorials. Released on CRAN with an MIT license: https://cran.r-project.org/package=groupdata2 GitHub: https://github.com/LudvigOlsen/groupdata2
cvms R package	Aarhus University, Aarhus	2016 -	cvms (Cross-Validation for Model Selection) allows easy cross-validation and evaluation of regression and classification models. Released on CRAN with an MIT license: https://cran.r-project.org/package=cvms GitHub: https://github.com/LudvigOlsen/cvms
xpectr R package	Aarhus University, Aarhus	2020-	xpectr generates *testthat* unit/regression tests for R. It aims to systematize and ease the process of building tests. Released on CRAN with an MIT license: https://cran.r-project.org/package=xpectr GitHub: https://github.com/ludvigolsen/xpectr
rearrr	Aarhus	2020-	rearrr allows various forms of

R Package	University, Aarhus		rearrranging and mutation of data. Released on CRAN with an MIT license: https://cran.r-project.org/package=rearrr GitHub: https://github.com/LudvigOlsen/rearrr
Music CV			
Tom Parantes	Navlebeskuer	2024	Single: Genre: Danish alternative pop
Når Du Går	FLÕR	2023	EP with 4 tracks. Mixing and co-production. Genre: Danish pop
Had og Hormoner	Navlebeskuer	2022	EP with 4 tracks. Genre: Danish alternative pop
Min Skyld	Navlebeskuer	2016	Single Genre: Danish alternative pop
Trip To The Sewer	Ludvig Olsen	2014	Album Genre: Soundscape
Breathing Seagull	Ludvig Olsen	2013	Album Genre: Soundscape I recorded 2 seconds of a seagull scream and stretched it to ~30 min. of soundscapes. Got a four-star review in the national music magazine Gaffa.
Concert	Jelling Musikfestival, Jelling (Music Festival)	2013	Singer-songwriter set
Concert	Faktorý, Reykjavik, Iceland	2013	Singer-songwriter set
Concert	KEX, Reykjavik, Iceland	2013	Singer-songwriter set