HELMER HERMAN KOPPELMAN

ABOUT ME

Experienced researcher with several publications in top-tier journals and an affinity for **statistics**, **data science, data analysis**, and **machine learning**. Can-do attitude with a pragmatic approach to problem solving. Proven track record of communicating abstract concepts to expert and general audiences.

Seeking a position where I can create business solutions from data insights

CONTACT

🇺🇸 (+1) 609 356 4715

🇳🇱 (+31) 06 3444 3587

helmerkoppelman@hotmail.com

https://hhkoppelman.github.io

EXPERIENCE

Postdoctoral Researcher - *Institute for Advanced Study* 2020 -

I study the structure, dynamics, and formation history of the Milky Way by statistical analysis of large astronomical data sets, and the interpretation of observations with theory. A selection of project:

- **Identifying pairs of stars with almost identical motions** (out >1 billion)
- **MCMC fitting of a Gaussian mixture model with deconvolution** to determine the motion of a dwarf galaxy
- **Statistical analysis of the correlations between properties of planets and their host stars**

PhD Candidate Astrophysics - *University of Groningen* 2016 - 2020

- **Bayesian regression analysis** to find the escape velocity of the Milky Way
- **Applying clustering algorithms** to find and study extragalactic stars
- **Optimization of numerical integrals** (>1000 times faster)
- **Modifying algorithms (C/C++/Fortran)** to modify code for custom use cases

Kaggle competition (machine learning)

Our team finished top 5% in a kaggle.com competition for text classification where we build a model to flag toxic comments. I trained our best performing neural network

Board experience

- Secretary and chair (1yr each) of executive board sports club 2011 - 2013
- Founding executive board member (1.5 yr) study association 2016 - 2017

SELECTED COMPETENCES

- **10+ years experience in programming in Python**
- **10+ years of experience in data visualization** (featured in scientific papers, newspapers, magazines, documentaries, planetarium shows, and a textbook on galaxy formation)
- **5+ years experience with data science and analysis**
- **5+ years experience in Machine Learning** regression models, decision trees, mixture models (with deconvolution), Gaussian processes, normalizing flows, and neural networks for image classification and text analysis

ADDITIONAL ACTIVITIES

Coaching & Teaching

Creating practice exams (2013-2016)
Co-mentored 1 BSc student
Co-mentored 1 MSc student
Co-mentored 2 students at a summer school on dynamics (2021)

Teaching assistant

'Intro to Programming' (2017, 2019)
'Dynamics of Galaxies' (2018, 2020)

Leadership & teamwork

Organizational work for the faculty, study association, and sports club:
Sports tournaments
Galas and other social events
Symposium
Faculty introduction camp
Program committee of astronomy
Chair of first-year PhD committee

Communication

20+ scientific talks
10+ public talks
3+ live interviews on local radio
5+ magazine interviews
Creating illustrations and animations for (inter)national media

EDUCATION

University of Groningen

PhD Astronomy (cum laude)	2016 - 2020
MSc Astronomy (cum laude)	2014 - 2016
BSc Astronomy	2011 - 2014

LIBRARIES & TOOLS

Data preprocessing & analysis ●●●●●
(pandas, vaex, jupyter)

Scientific computing ●●●●●
(numpy, scipy, matplotlib, sklearn)

Dimensionality reduction ●●●●○
(t-SNE, UMAP, PCA)

Statistical modeling ●●●●○
(Regression, clustering, classification)

Neural Networks ●○○○○
(Keras, PyTorch, Jax, TensorFlow)

LANGUAGES

Spoken

Dutch (native) ●●●●●
English ●●●●●

Programming

Python/UNIX ●●●●●
Fortran/git/SQL ●●●○○
C/C++/HTML/Matlab ●○○○○

AWARDS & PRIZES

Wierenga-Rengerink PhD Prize nominee

My thesis was selected as best thesis of the Faculty of Science and Engineering in 2021, out of 200+ theses, and nominated as best thesis of the university

PUBLICATIONS

	Total	First Author
Submitted	17	9
Refereed	14	8
Citations	942	227

August 2021, see also Google Scholar