Jouni Helske **Curriculum Vitae** **15.9.2020**

1. Personal details

Name: Helske, Jouni Veikko Taneli
ORCID: 0000-0001-7130-793X
Year of birth: 1983
Nationality: Finnish

2. Education and degrees completed

9/12/2015	PhD in Statistics, University of Jyväskylä, Finland
25/8/2010	MSc in Statistics, University of Jyväskylä, Finland
28/7/2010	BSc in Statistics, University of Jyväskylä, Finland

3. Other education

1/6/2002	Information Technology, Vocational Qualification (3 years), Jyväskylä Vocational Institute of Technology, Jyväskylä, Finland

4. Language proficiency

Finnish (native), English (fluent), Swedish (basics)

5. Current position

1/9/2020–present	**Senior Researcher** Department of Mathematics and Statistics, University of Jyväskylä, **Finland**

6. Previous work experience

1/9/2019–31/8/2019	**Postdoctoral Researcher** Department of Mathematics and Statistics, University of Jyväskylä, **Finland**
16/10/2017–31/8/2019	**Postdoctoral Researcher in Visual Analytics** Department of Science and Technology, Linköping University, **Sweden**
1/1/2016–15/10/2017	**Postdoctoral Researcher** Department of Mathematics and Statistics, University of Jyväskylä, **Finland**
1/9/2010 –31/12/2015	**Doctoral Student** Department of Mathematics and Statistics, University of Jyväskylä, **Finland**
1/6/2010 –31/8/2010	**Research Assistant** Department of Signal Processing, Tampere University of Technology, **Finland**

International research visits:

9/2016–7/2017	Department of Statistics, University of Oxford, **United Kingdom**
9–10/2017	Department of Information Technology, Uppsala University, **Sweden**

7. Career breaks

1/10/2013–31/8/2014 Parental leave between October 2013 and August 2014.

8. Research funding and grants

2020 Academy of Finland: **Project funding for a consortium project**: Towards well-informed decisions: Predicting long-term effects of policy reforms on life trajectories (PREDLIFE) (9/2020–8/2024). Consortium PI Satu Helske (University of Turku); **Subconsortium-PI** Jouni Helske (University of Jyväskylä). 560,000€

2013 Emil Aaltonen Foundation: **Personal scholarship** for full-time doctoral studies. 25000€.

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9. Scientific output

Since 2010 I have authored 10 peer-reviewed, 3 non-peer-reviewed scientific articles or book chapters, and 3 papers currently under review. These papers have been cited 207 times with h-index 6 (Google Scholar, 15.9.2020).

In addition to these, I have produced nine R statistical software packages currently at The Comprehensive R Archive Network (CRAN) as a result of my research, most notably the R packages KFAS, seqHMM, and bssm for exponential family state space modelling, multivariate hidden Markov modelling, and Bayesian non-Gaussian states space modelling respectively. These nine packages have thousands of downloads per month: https://www.jyu.fi/science/en/maths/research/infrastructure/r-packages-created-at-the-department

Most important publications and working papers (citation count from Google Scholar, 27.6.2020):

- Vihola, M, **J Helske**, and J Franks (2020). Importance sampling type estimators based on approximate marginal MCMC. Scandinavian Journal of Statistics. https://onlinelibrary.wiley.com/doi/abs/10.1111/sjos.12492. Cited 20 times.
- **Helske, J**, S Tikka, J Karvanen (2020). Estimation of causal effects with small data under implicit functional constraints. Under review. https://arxiv.org/abs/2003.03187.
- **Helske, J** (2017). KFAS: Exponential Family State Space Models in R. Journal of Statistical Software 78(10). https://www.jstatsoft.org/article/view/v078i10. Cited 74 times.
- Lindsten, F, **J Helske**, and M Vihola (2018). "Graphical model inference: Sequential Monte Carlo meets deterministic approximations". In: Advances in Neural Information Processing Systems 31. Ed. by S Bengio, H Wallach, H Larochelle, K Grauman, N Cesa-Bianchi, and R Garnett. Curran Associates, Inc., pp. 8190-8200. https://arxiv.org/abs/1901.02374. Cited 4 times.
- Voutilainen, M, **J Helske**, and H Högmander (2020). A Bayesian reconstruction of historical population in Finland 1647-1850. Demography. https://doi.org/10.1007/s13524-020-00889-1.
- Helske, S and **J Helske** (2019). Mixture Hidden Markov Models for Sequence Data: The seqHMM Package in R. Journal of Statistical Software 88(3), 1–32. https://www.jstatsoft.org/article/view/v088i03.Cited 44 times.

- Luukko, PJ, **J Helske**, and E Räsänen (2016). Introducing libeemd: a program package for performing the ensemble empirical mode decomposition. Computational Statistics 31(2), 545–557. https://jyx.jyu.fi/handle/123456789/49577. Cited 37 times.
- Helske, S, **J Helske**, and M Eerola (2018). "Combining Sequence Analysis and Hidden Markov Models in the Analysis of Complex Life Sequence Data". In: Sequence Analysis and Related Approaches. Ed. by G Ritschard and M Studer. Springer International Publishing, pp.185–200. https://link.springer.com/chapter/10.1007/978-3-319-95420-2_11. Cited 7 times.
- **Helske, J**, S Helske, M Cooper, A Ynnerman, and L Besançon (2020). Are You Sure You're Sure? - Effects of Visual Representation on the Cliff Effect in Statistical Inference. Under review. https://arxiv.org/abs/2002.07671
- Muthumanickam, P, **J Helske**, A Nordman, J Johansson, and M Cooper (2020). "Comparison of Attention Behaviour Across User Sets through Automatic Identification of Common Areas of Interest". In: 53nd Hawaii international conference on system sciences, HICSS 2020. https://scholarspace.manoa.hawaii.edu/handle/10125/63906.

10. Leadership and supervision experience

I am the main supervisor of Tiia-Maria Pasanen who started her PhD studies in statistics in August 2020 at the University of Jyväskylä.
I am the co-supervisor (main supervisor until March 2021) of Lauri Valkonen who started his PhD studies in statistics in August 2020 at the University of Jyväskylä.
I was the unofficial co-advisor of statistics PhD student Gurjinder Mohan at the Oxford University in 2016-2017.

11. Teaching experience

Course	Place	ECTS	Role	Level	Language	Year
Bayesian Statistics 1	JYU	5	Responsible teacher	BSc	Finnish	2020
Generalized linear models 2	JYU	5	Responsible teacher	BSc	Finnish	2020
Graduate Lecture series	Oxf		Guest lecture (computationally efficient state space modelling)	PhD	English	2017
Stochastic simulation	JYU	4	Lab supervision	MSc	English	2016
Basics in statistics 2	JYU	5	Lab supervision	BSc	Finnish	2016
R Course	JYU	2	Responsible teacher	BSc	Finnish	2015, 2014, 2013, 2012 (x2)
Time series analysis	JYU		Guest lecture (state space modelling)	BSc	Finnish	2015
Statistical computing seminar	JYU	3	Responsible teacher	PhD	English	2013
Basics in statistics 1	JYU	6	Lab supervision	BSc	Finnish	2011, 2010, 2008
Sampling methods	JYU	6	Lab supervision	BSc	Finnish	2011

Advanced course in statistics	JYU	9	Lab supervision	BSc	Finnish	2010
Basic course in statistics	JYU	6	Lab supervision	BSc	Finnish	2008

Oxf: Dept. of Statistics, University of Oxford; JYU: Dept. of Mathematics and Statistics, University of Jyväskylä

12. Patents, inventions, awards and honours

2016 Longitudinal Data Analysis Contest Award, LaCOSA II Conference, Lausanne, Switzerland.
2015 Best poster award, UseR! 2015 Conference, Aalborg, Denmark.

13. Other key scientific or academic merits

Reviewer for

- Journals Australian & New Zealand Journal of Statistics, Industrial & Engineering Chemistry Research, Stat, Stochastic Environmental Research and Risk Assessment, Sensors, Applied Computational Intelligence and Soft Computing, Mathematical and Computational Applications, Mathematics, R Journal.
- CHI 2019 conference.

Member of the organizing committee for

- Novel approaches to numerical challenges related to environmental monitoring, 2015, Jyväskylä, Finland.
- Statistical Days 2013, 2013, Jyväskylä, Finland.
- Seminar on Current Doctoral Research in Biostatistics, Statistics and Related Areas, 2011, Helsinki, Finland.

14. Scientific and societal impact

- 2016-2018 I provided statistical consultancy for Finnish Environment Institute on project SAVE which studied the effects of gypsum in agriculture.
- I have collected open access data for assessing the effects of visualization on statistical inference, available at https://github.com/helske/statvis.
- Codes for reproducing the analysis of my recent and upcoming publications are available online at github.com/helske and all publications or preprints are available in open access.