

## 1. Personal details

Name: Helske, Jouni Veikko Taneli (previously Lehtonen)

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); <b>Subconsortium-PI</b> Jouni Helske. 560,000€
2013	Emil Aaltonen Foundation: <b>Personal scholarship</b> for full-time doctoral studies. 25000€.
2012	Emil Aaltonen Foundation: <b>Personal scholarship</b> for full-time doctoral studies. 23000€.
2011	Emil Aaltonen Foundation: <b>Personal scholarship</b> for full-time doctoral studies. 23000€.

## 9. Scientific output

Since 2010 I have authored 9 peer-reviewed, 3 non-peer-reviewed scientific articles or book chapters, and 6 papers currently under review. These papers have been cited 198 times with h-index 6 (Google Scholar, 27.6.2020).

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 and seqHMM for exponential family state space modelling and multivariate hidden Markov modelling respectively. These eight packages have thousands of downloads per month: <https://www.jyu.fi/science/en/math/research/infrastructure/r-packages-created-at-the-department>

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

- **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 70 times.
- 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.
- Vihola, M, **J Helske**, and J Franks (2020). Importance sampling type estimators based on approximate marginal MCMC. arXiv e-prints. <https://arxiv.org/abs/1609.02541>. Cited 19 times.
- Voutilainen, M, **J Helske**, and H Högmänder (2020). A Bayesian reconstruction of historical population in Finland 1647-1850. Demography. <https://doi.org/10.1007/s13524-020-00889-1>.
- 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.
- 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](https://link.springer.com/chapter/10.1007/978-3-319-95420-2_11). Cited 7 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**, 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: 53rd Hawaii international conference on system sciences, HICSS 2020. <https://scholarspace.manoa.hawaii.edu/handle/10125/63906>.

## 10. Leadership and supervision experience

I will be the main supervisor of Tiia-Maria Pasanen who starts her PhD studies in statistics in August 2020 at the University of Jyväskylä.

I will be the co-supervisor of Lauri Valkonen who starts 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, 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](https://github.com/helske) and all publications or preprints are available in open access.