Kory D. Johnson

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Applied Statistics Research Unit (ASTAT)
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Academic Positions

2021.5 - present
TU Wien
Applied Statistics Research Unit (ASTAT)
Universitätsassistent (Assistant Professor, non-tenure track)

2020.9 - 2021.4
Vienna University of Economics and Business
Institute for Statistics and Mathematics
Postdoctoral Research Fellow

2019.9 - 2020.9
Vienna University of Economics and Business
Institute for Statistics and Mathematics
Universitätsassistent (Assistant Professor, non-tenure track)

2016.9 - 2019.9
The University of Vienna
Department of Statistics and Operations Research
Universitätsassistent (Assistant Professor, non-tenure track)

Education

2011 - 2016
The Wharton School, University of Pennsylvania
M.A. Statistics; Ph.D., Statistics
Dissertation Title: *Discrete Methods in Statistics: Feature Selection and Fairness-Aware Data Mining*
Advisers: Professors Robert Stine and Dean Foster
Degree Conferred: May 16, 2016

2007 - 2011
The Wharton School, University of Pennsylvania
B.S. in Economics summa cum laude; Statistics, minor in Mathematics
The College of Arts and Sciences, University of Pennsylvania
B.A. summa cum laude with Distinction in Economics and Philosophy

Research Interests

- Epidemiology: effective reproduction number, positivity rate, agent-based modeling, Bayesian hierarchical modeling
- Machine learning: prediction intervals, conformal inference, fairness-aware data mining, transfer learning
- Statistics: sequential testing, assumptions of model selection, inference after model selection, multiple comparisons

Publications

Jitka Polechová, Kory D. Johnson, Pavel Payne, Alex Crozier, Mathias Beiglböck, Pavel Plevka, and Eva Schernhammer. Evidence suggests that sars-cov-2 rapid antigen tests provide benefits for epidemic control – observations from austrian schools, 2021. URL https://arxiv.org/abs/2103.04979. J. Polechová and K. Johnson corresponding authors. Forthcoming in Journal of Clinical Epidemiology.

K. D. Johnson, R. A. Stine, and D. P. Foster. Impartial predictive modeling and the use of proxy variables. *ArXiv e-prints*, 2022. URL https://arxiv.org/abs/1608.00528. Forthcoming in Springer's Lecture Notes in Computer Science.

Kory D. Johnson, Mathias Beiglböck, Manuel Eder, Annemarie Grass, Joachim Hermisson, Gudmund Pammer, Jitka Polechová, Daniel Toneian, and Benjamin Wölfl. Disease momentum: Estimating the reproduction number in the presence of superspreading. *Infectious Disease Modelling*, 6:706–728, 2021. ISSN 2468-0427. doi: 10.1016/j.idm.2021.03.006. URL https://www.sciencedirect.com/science/article/pii/S2468042721000270.

Danijel Kivaranovic, Kory D. Johnson, and Hannes Leeb. Adaptive, distribution-free prediction intervals for deep networks. In *The 23rd International Conference on Artificial Intelligence and Statistics, AISTATS 2020, 26-28 August 2020, Online [Palermo, Sicily, Italy]*, pages 4346–4356, 2020. URL http://proceedings.mlr.press/v108/kivaranovic20a.html.

Lawrence D. Brown and Kory D. Johnson. Comment. *Journal of the American Statistical Association*, 111(514):614–617, 2016. URL http://dx.doi.org/10.1080/01621459.2016.1182788.

Under Revision

Kory D. Johnson, Annemarie Grass, Daniel Toneian, Mathias Beiglböck, and Jitka Polechová. Robust models of sars-cov-2 heterogeneity and control, 2021. Under revision at PLOS Global Public Health.

Preprints

Kory D. Johnson, Robert A. Stine, and Dean P. Foster. Fitting high-dimensional interaction models with error control. *ArXiv e-prints*, art. arXiv:1510.06322, a. URL https://arxiv.org/abs/1510.06322.

K. D. Johnson, R. A. Stine, and D. P. Foster. Submodularity in statistics: Comparing the success of model selection methods. *ArXiv e-prints*, b. URL http://arxiv.org/abs/1510.06301.

K. D. Johnson, D. Lin, L. H. Ungar, D. P. Foster, and R. A. Stine. A risk ratio comparison of l_0 and l_1 penalized regression. *ArXiv e-prints*, c. URL http://arxiv.org/abs/1510.06319.

In Preparation

Kory D. Johnson and Tobias Fissler. Optimality of conformal prediction intervals.

Kory D. Johnson and Darjus Hosszejni. State-space models for estimating the time-varying effective reproduction number.

Christian Url and Kory D. Johnson. Asymmetric, distribution-free predictive intervals for quantile forests.

Software

Kory D. Johnson. *lmimpartial: Impartial Estimates Using Linear Regression*, 2020. URL https://github.com/korydjohnson/lmimpartial. R package version 1.0.0.

Kory D. Johnson and Robert A. Stine. *rai: Revisiting-Alpha-Investing for Polynomial Regression*, 2019. URL https://github.com/korydjohnson/rai. R package version 1.0.0.

Selected Presentations

Robust Models of SARS-CoV-2 Heterogeneity and Control, November 2021. Universität Wien Arbeitsgemeinschaft Biomathematik. Vienna, Austria.

Adaptive, Distribution-Free Prediction Intervals for Deep Neural Networks, December 2019. University of Vienna Deep Learning Seminar. Vienna, Austria.

Revisiting Alpha-Investing: mFDR Control in Polynomial Regression, December 2018. Computational and Methodological Statistics 2018. Pisa, Italy. **Invited Talk**.

Comment: Exact Post-selection Inference for Sequential Regression Procedures, November 2018. Larry Brown Memorial Workshop, Young Researcher Session. Philadelphia, USA.

Stopping Stepwise Regression with the Sequential Rejection Principle, September 2018. Royal Statistical Society 2018 International Conference. Cardiff, Wales. **Invited Talk**.

Sequential Testing for Inference During Model Selection, July 2018. Workshop on Model Selection, Regularization, and Inference. Vienna, Austria.

Controlling FWER in Stepwise Regression Using Multiple Comparisons, December 2017. Computational and Methodological Statistics 2018. London, England. **Invited Talk**.

Valid Stepwise Regression Using Sequential Testing, July 2017. Joint Statistical Meetings. Baltimore, USA.

Sequential Testing for Inference During Model Selection, March 2017. University of Vienna Department of Statistics and Operations Research.

Submodularity in Statistics, August 2015. Joint Statistical Meeting. Seattle, USA.

Collaborators

Previous	Lawrence D. Brown (University of Pennsylvania); Dean P. Foster (Amazon.com); Robert A. Stine (Amazon.com); Danijel Kivaranovic (DEXT.AI); Hannes Leeb (University of Vienna)
Current	Jitka Polechová (University of Vienna); Mathias Beiglböck (University of Vienna); Annemarie Grass (University of Vienna); Tobias Fissler (Vienna University of Economics and Business); Darjus Hosszejni (Vienna University of Economics and Business); Pavol Harar (University of Vienna); Monika Dörfler (University of Vienna); Dennis Elbrächter (ETH Zürich)

Teaching Experience

Instructor: Lecturer

Winter 2021	Statistics and Probability Theory (for informatics students)
Winter 2020	Applied Econometrics
Summer 2020	Financial Mathematics
Summer 2020	Statistik (in German)
Winter 2018	Statistical Programming: Introduction to R
Summer 2018	Large-Scale Inference (master's level)
Winter 2017	Data Science Case Studies in R (master's level)
Summer 2017	Nonparametric Inference (master's level)
Summer 2015	Introductory Business Statistics

Instructor: Exercise Course

Winter 2021	Statistics and Probability Theory (for informatics students)
Summer 2021	Introduction to Statistics (for mathematics students)
Summer 2020	Quantitative Methods II
Summer 2017	Statistical Inference
Winter 2016	Linear Models
Spring 2015	Introductory Statistics
Spring 2012	Introductory Statistics

Teaching Assistant

Spring 2016	Modern Regression for Social, Behavioral, and Biological Sciences
Fall 2015	Introductory Business Statistics II
Fall 2014	Introductory Business Statistics I
Spring 2014	Applied Econometrics II
Fall 2013	Intermediate Statistics
Spring 2013	Introductory Business Statistics I
Fall 2012	Applied Econometrics I
Fall 2011	Introductory Business Statistics II

Master's Theses

January, 2020	Christian Url; *Distribution-Free Predictive Intervals for Quantile Forests*
April, 2019	Mathias Wörndl; *Knockoffs*

Other Experience

2020.5 - 2020.12	*Statistical Consultant*, Shelterluv. San Francisco, CA.
2019.3 - 2019.3	*Visiting Researcher*, Amazon. New York, NY.
2009.7 - 2009.8	*Marketing Intern*, Citibank Singapore. Singapore, SG.
2008.9 - 2009.5	*Consultant*, Wharton Small Business Development Center. Philadelphia, PA.

Technical Skills

- Extensive experience in LaTeX and R (tidyverse, ggplot2, etc).
- Frequent experience in Python (PyTorch, pandas, sklearn).
- Experience in Matlab, SQL, C♯, VBA, and Microsoft Office.
- German Language (B2).

Hobbies

Rock climbing, splitboarding, and mountaineering.