

PERSONAL INFORMATION

DAVID KEPPLINGER

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EDUCATION

Sep '15 – Aug '20

PhD in Statistics

Thesis title: Robust Estimation and Variable Selection in High-Dimensional Linear Regression Models

Advisor: Gabriela Cohen Freue

Granting institution: University of British Columbia, Vancouver, BC

Oct '12 – Jun '15

Master of Science in Statistics

Thesis title: Discriminant Analysis Based on Robust Regularized Covariance Estimation

Advisor: Peter Filzmoser

Granting institution: Vienna University of Technology, Vienna (Austria)

Sep '12 – Dec '12

Visiting graduate student in the Department of Statistics

University of British Columbia, Vancouver, BC

Oct '09 – Jul '12

Bachelor of Science in Software & Information Engineering

Vienna University of Technology, Vienna (Austria)

RESEARCH EXPERIENCE

Publications

- 2019 Cohen Freue GV, **Kepplinger D****, Salibián-Barrera M, Smucler E. Robust elastic net estimators for variable selection and identification of proteomic biomarkers. *Annals of Applied Statistics*. Volume 13. 2019;4:2065-2090. (** in alphabetical order)
- 2017 **Kepplinger D**, Takhar M, Sasaki M, Hollander Z, Smith D, McManus B, et al. PGCA: An algorithm to link protein groups created from MS/MS data. *PLOS ONE*. Public Library of Science; 2017;12:1-19.
- 2014 Upadhyaya S, **Kepplinger D**. How industrial development matters to the well-being of the population: Some statistical evidence. *UNIDO Working Paper*. 2014.
- 2013 **Kepplinger D**, Templ M, Upadhyaya S. Analysis of energy intensity in manufacturing industry using mixed-effects models. *Energy*, Volume 59. 2013, 754-763.

Preprints and Work in Progress

- 2020+ **Kepplinger D**. Robust Variable Selection with the Adaptive Elastic Net S-Estimator for Linear Regression. In preparation.
- 2020+ Watson J, **Kepplinger D**, Cohen Freue GV. Thrice Robust Instrumental Variable Estimation with Application to Mendelian Randomization. In preparation.
- 2017 **Kepplinger D**, Filzmoser P, Varnuza K. Variable selection with genetic algorithms using repeated cross-validation of PLS regression models as fitness measure. arXiv:1711.06695.

Peer-reviewed Conference Presentations

- Jun '19 **19th International Conference on Robust Statistics (ICORS)** in Guayaquil, Ecuador. "Variable Selection Via Adaptive Elastic Net S-Estimators".
- Aug '18 **JSM 2018** in Vancouver, Canada. "Improved Robust Estimation of the Residual Scale in High-Dimensional Problems with the Adaptive Elastic Net S-Estimator for Efficient Robust Penalized Linear Regression Methods".
- Jun '18 **46th Annual Meeting of the Statistical Society of Canada** in Montreal, Canada. "Improving the Robust Estimation of the Residual Scale in High Dimensional Regression Problems with Refitted Cross-Validation using an Elastic Net S-Estimator".

Invited Talks

- Oct '18 **UBC-SFU Joint Seminar** in Vancouver, Canada. "Improving Robust Estimation of the Residual Scale in High Dimensions".
- Nov '17 **UBC Department of Statistics Seminar** in Vancouver, Canada. "Data Science and Machine Learning at Ecoation".
- Aug '16 **22nd International Conference on Computational Statistics (COMPSTAT 2016)** in Oviedo, Spain. "Initial estimators for regularized robust methods in high-dimensional settings".
- Oct '15 **UBC-SFU Joint Seminar** in Vancouver, Canada. "Robust Regularized Estimation of the Inverse Covariance Matrix".
- Aug '14 **21st International Conference on Computational Statistics (COMPSTAT 2014)** in Geneva, Switzerland. "How industrial development affects the well-being of populations: A detailed analysis to reveal the underlying mechanics. Poster and keynote presentation".
- Jun '14 **International Seminar on Industrial Statistics "20 Years Statistics in Service of the Nations for Industrialization"** dedicated to the 20th Edition of the *International Yearbook of Industrial Statistics* in Vienna, Austria. "How industrial development affects the well-being of populations: some statistical evidences".

Seminal Papers

- 2015 Diploma thesis at the Vienna University of Technology (supervised by Filzmoser, P. and Todorov, V). "Robust regularized linear discriminant analysis for high-dimensional data by estimating the sparse inverse covariance matrix for an optimal subset of the data".
- 2014 Vienna University of Technology (supervised by Filzmoser, P. and Varmuza, K.). "Variable selection for PLS regression models using genetic algorithms".
- 2012 Vienna University of Technology (supervised by Templ, M.). "Compile and analyze data on energy consumption and industrial output for further research of energy intensity in manufacturing industry".

TEACHING EXPERIENCE

Spring '20 **Instructor**

Department of Statistics; University of British Columbia, Vancouver, BC

Sole instructor for **STAT 305 – Introduction to Statistical Inference** (concepts and methods of statistical inference) with an anticipated number of 180 students mainly specializing in Statistics, Mathematics, and Computer Science.

Teaching assistant

Department of Statistics; University of British Columbia, Vancouver, BC

Fall '19 **STAT 305 – Introduction to Statistical Inference:** Concepts and methods of statistical inference with a majority of students specializing in Statistics, Mathematics, and Computer Science.

Spring '19 **STAT 450/550 – Case Studies in Statistics:** Case studies and consulting for real-world clients open to advanced undergraduate students with a major or minor in Statistics and graduate students in Statistics.

Fall '15 **STAT 406 – Methods for Statistical Learning:** Theory and applications of methods for statistical learning with a majority of students specializing in Statistics and Computer Science.

Fall '12 **STAT 251 – Elementary Statistics:** Introductory statistics course (mainly) for Engineering students.

Fall '12 **STAT 344 – Sample Surveys:** Sampling from and estimation under finite populations.

Teaching assistant

and Fall '13 University of Natural Resources and Life Sciences, Vienna (Austria)

Applied Mathematics and Biostatistics for Biotechnology: Introduction and applications of statistical methods for graduate students in Biotechnology.

Teaching assistant

Vienna University of Technology, Vienna (Austria)

Data Analysis: Statistical methods and tools for exploratory data analysis and visualization targeted at undergraduate students specializing in Computer Science or Mathematics.

HONOURS AND AWARDS

Sep '15 – Aug '19 **Four-year Doctoral Fellowship**

Awarded by the Department of Statistics, University of British Columbia, Vancouver, BC

2018 **Graduate Teaching Assistant Award**

Awarded by the Department of Statistics, University of British Columbia, Vancouver, BC

2015, 2016 & 2017 **Graduate Student Award**

Awarded by the Faculty of Science, University of British Columbia, Vancouver, BC

2014 **Winner of the IASC 2014 Data Analysis Competition**

Awarded by the IASC COMPSTAT 2014 conference for the research project and case study "Robust regression with compositional data".

PROFESSIONAL DEVELOPMENT

Oct '18 **Instructional Skills Workshop**

3-day workshop for peer-based instructional development designed to strengthen instructors' skills through intensive practical exercises in learner-centred teaching.

SOFTWARE

R Packages on CRAN

pense: Penalized Elastic Net S/MM-Estimator of Linear Regression.

pyinit: Pena-Yohai Initial Estimator for Robust S-Regression.

compLmrob: Robust Linear Regression with Compositional Covariates.

gaselect: Genetic Algorithm for Variable Selection using Partial Least Squares.

R Packages on Bioconductor

PGCA: Algorithm to Link Protein Groups Created from MS/MS Data.

PROFESSIONAL SERVICES

Referee

Austrian Journal of Statistics

Computational Statistics

Journal of the American Statistical Association

Patterns

The Canadian Journal of Statistics

Conference Session Chair

19th International Conference on Robust Statistics (ICORS 2019).

46th Annual Meeting of the Statistical Society of Canada (SSC 2018).

Membership

American Statistical Association

Statistical Society of Canada

DEPARTMENTAL SERVICES

May '16 – Present

TA Mentor

Department of Statistics; University of British Columbia, Vancouver, BC

Mentor new TAs in the department's TA training program.

Jul '17 – May '19

Graduate Student Representative

Department of Statistics; University of British Columbia, Vancouver, BC

Coordinate graduate student events and represent graduate students' interests in official departmental processes.

Sep '18 – Jan '19

Member of the Faculty Search Committee

Department of Statistics; University of British Columbia, Vancouver, BC

Representing graduate students interests and opinions on the search committee for two tenure-track faculty positions at the Department of Statistics.

Sept '16 – Apr '17 **Workshop Facilitator**

Applied Statistics and Data Science (ASDa) Group, Department of Statistics
University of British Columbia, Vancouver, BC

Design and facilitation of workshops on R and statistical methods for researchers in the life sciences.