

**SAM 2024 Program**  
**Naturwissenschaftliche Fakultät Building**  
**Hellbrunner Strasse 34, 5020 Salzburg, Austria**

**Day 1: July 9, 2024**

**Opening Remarks: 8:50-9:00, July 9, 2024**

**Room: HS 401**

**Lei Liu and Arne Bathke**

**IBS-ROeS Keynote Speech Keynote Speech I: 9:00-10:00, July 9, 2024**

**Room: HS 401**

**Chair: Prof. Yichuan Zhao**

**Ian McKeague: Nonparametric methods for wearable device data**

**Break 10:00-10:15, July 9, 2024**

**Parallel Invited Sessions 1-4: 10:15-12:00, July 9, 2024**

**Invited Session 1: Joint Modeling of Complex Survival Data**

**Organizer: Xinyuan Song. Chair: Lan Luo. Room: HS 402**

Xingqiu Zhao: Deep Nonparametric Inference for Conditional Hazard Function

Liming Xiang: Multiple Imputation for Flexible Modelling of Interval-censored Data with Covariates Subject to Missingness and Detection Limits

Jun Ma: Joint modelling of longitudinal covariates and partly-interval censored survival data - a penalized likelihood approach

Xinyuan Song: Bayesian tree-based heterogeneous mediation analysis with a time-to-event outcome

### **Invited Session 2: Analysis of multi-dimensional correlated data**

**Organizer: Peter Song. Chair: Peter Song. Room: HS 401**

Annie Qu: Optimal Individualized Treatment Rule for Combination Treatments under Budget Constraints

Michael Elliott: Using variability in longitudinally-measured variables as a predictor of health outcomes

Ji Zhu: A Latent Space Model for Hypergraphs with Diversity and Heterogeneous Popularity

Jian Kang: Bayesian methods for brain-computer interfaces

### **Invited Session 3: Statistical Methods for Metagenomic Data**

**Organizer: Gen Li. Chair: Xiaonan Xue. Room: HS 414**

Hongzhe Li: Transfer Learning with Random Coefficient Ridge Regression for Microbiome Applications

Jiyuan Hu: Joint Modeling of Longitudinal Microbiome Data and Survival outcome

Zhigang Li: Estimating equations with inverse probability weighting for microbiome analysis

Gen Li: Analysis of Microbiome Differential Abundance by Pooling Tobit Models

### **Invited Session 4: Flexible statistical learning for complex data**

**Organizer: Yufeng Liu. Chair: Emily Hector. Room: HS 403**

Eric Chi: Proximal MCMC for Bayesian inference of constrained and regularized estimation

Ali Shojaie: Learning causal effects of multiple covariates on multiple outcomes in high dimensions

Zhengyuan Zhu: Maximizing Benefits under Harm Constraints: A Generalized Linear Contextual Bandit Approach

Ping Ma: Analyzing CITE-seq Data via a Quantum Algorithm

**Lunch 12:00-1:00, July 9, 2024 (FREE for registrants)**

**Parallel Invited Sessions 5-8: 1:00-2:45, July 9, 2024**

### **Invited Session 5: Analysis of data with multiple treatments and mixed outcomes**

**Organizer: Lan Luo. Chair: Menggang Yu. Room: HS 414**

Emily Hector: Turning the data-integration dial: efficient inference from different data sources

Lan Luo: Efficient quantile covariate adjusted response adaptive experiments

Ling Zhou: High-dimensional subgroup learning for multiple mixed outcome

Liangyuan Hu: Estimating the causal effect of multiple intermittent treatments on censored survival outcomes

### **Invited Session 6: Precision Medicine and Survival Analysis**

**Organizer: Simon Hirländer. Chair: Simon Hirländer. Room: HS 401**

Danyu Lin: Evaluating Treatment Efficacy in Hospitalized Covid-19 Patients

Limin Peng: Dynamic regression of longitudinal trajectory features

Lei Liu: Deep Learning Models to Predict Primary Open-Angle Glaucoma

### **Invited Session 7: Advanced methods for complicated data analysis**

**Organizer: Ying Wei. Chair: Cheng Zheng. Room: HS 402**

Nanhua Zhang: Bayesian Dirichlet Regression for Correlated Compositional Outcomes with Application to an Experimental Sleep Study

Tian Gu: A Robust Angle-based Transfer Learning

Yanyuan Ma: Doubly Flexible Estimation under Label Shift

Ying Wei: A Double Projection Approach for Safe and Efficient Semi-Supervised Data-Fusion

### **Invited Session 8: Recent developments in Survival Analysis and Statistical Machine Learning**

**Organizer: Tony Sun. Chair: Xingqiu Zhao. Room: HS 403**

Jianwen Cai: Feature screening for case-cohort studies with failure time outcome

Wen Su: Deep Generative Estimation of Conditional Survival Function

Yifan Cui: Fiducial inference in survival analysis

Qixian Zhong: Hypothesis Testing for the Deep Cox Model

**Break 2:45-3:00, July 9, 2024**

## **Parallel Invited Sessions 9-12: 3:00-4:45, July 9, 2024**

### **Invited Session 9: Advance Development and Application of Joint modeling**

**Organizer: Cheng Zheng. Chair: Zhigang Li. Room: HS 403**

Ying Zhang: Semiparametric Inference for Misclassified Semi-Competing Risks Data under Gamma-Frailty Conditional Markov Model

Cheng Zheng: Investigating Multiple Causal Mechanisms with Multiple Mediators and Estimating Direct and Indirect Effects: A Joint Modeling Approach for Recurrent and Terminal Events

Yuying Xie: Clustering and visualization of single-cell RNA-seq data using path metrics

Danping Liu: Dynamic Risk Prediction for Cervical Precancer Screening with Continuous and Binary Longitudinal Biomarkers

### **Invited Session 10: Statistical and machine learning methods in biomedical research**

**Organizer: Qi Long. Chair: Nanhua Zhang. Room: HS 414**

Ying Guo: A Regularized Blind Source Separation Framework for Unveiling Hidden Sources of Brain Functional Connectome

Suprateek Kundu: Flexible Bayesian Product Mixture Models for Vector Autoregressions

Youngjoo Cho: Estimation of heterogeneous treatment effects for competing risks data using random forests

### **Invited Session 11: Generalizability consideration in heterogeneous data**

**Organizer: Menggang Yu. Chair: Michael Elliot. Room: HS 401**

Jeremy Taylor: James-Stein approach for improving prediction of linear regression models by integrating external information from heterogeneous populations.

Lu Tian: Adaptive Prediction Strategy with Individualized Variable Selection

Menggang Yu: Entropy Balancing for Causal Generalization with Target Sample Summary Information

Ruth Pfeiffer: Accommodating population differences in model validation

### **Invited Session 12: Survival analysis and its applications**

**Organizer: Yichuan Zhao. Chair: Jonas Beck. Room: HS 402**

Gang Li: Joint Modeling of Longitudinal and Interval-Censored Time-to-Event Data With Heterogeneous Within-Subject Variability

Amita Manatunga: Noninvasive Monitoring for Anemia in Very Low Birth Weight Infants Using Smartphone Images

Yi Li: Multi-task Learning for Gaussian Graphical Regressions with High Dimensional Covariates

Yichuan Zhao: Weighted empirical likelihood inference for the difference between the areas under two correlated ROC curves with right-censored data

**Break 4:45-5:00, July 9, 2024**

**Parallel Contributed Sessions 1-4: 5:00-6:00, July 9, 2024**

**Contributed Session 1: Applications of Machine Learning and Artificial Intelligence.**

**Chair: Arne Bathke. Room: HS 414**

Nicolò Biasetton. Advancing Consumer Understanding in Sustainable Product Development: exploring Novel Methodologies Integrating Aspect-Based Sentiment Analysis and NLP

Elena Barzizza. A Framework for Automated Web Scraping and Sentiment Analysis of Product Reviews using ChatGPT

Alberto Molena. Predicting football match attendance and optimizing revenues using Machine Learning

Riccardo Ceccato. Choosing the optimal number of fuzzy clusters: a nonparametric approach

**Contributed Session 2: Estimation and Inference with Complex Data Structures**

**Chair: Patrick Langthaler. Room: HS 401**

Li-Hsiang Lin. High-Dimensional Multivariate Linear Regression with Weighted Nuclear Norm Regularization

Soham Bakshi. Selective Inference for Time-Varying Effect Moderation

Mali Abdollahian: Application of Multivariate Statistical Quality Control and Profile Monitoring in the medical area

**Contributed Session 3: Innovative Analysis of Clinical Trial Data**

**Chair: Yi Li. Room: HS 402**

Zhichen Xu. Subgroup Identification Based on Mixed Model for Repeated Measures for Alzheimer's Disease Trial

Ashwini Joshi. Statistical analysis of irregularly observed multiple outcomes of treatments in patients with age-related chronic diseases: Application to wet age-related macular degeneration (AMD)

S. Schoenen. The Impact of Allocation Bias on the Test Decisions in Clinical Trials with Multiple Endpoints

#### **Contributed Session 4: Bayesian Statistics**

**Chair: Lu Tian. Room: HS 403**

David M. Hughes. Scalable Bayesian modelling of multivariate longitudinal data: A comparison of computational options

Javier Aguilar. Generalized Decomposition Priors on R2

Victor De Oliveira. On Inference about the Smoothness Parameter in Gaussian Mat'ern Random Fields

**Banquet/InflaRx Junior Research Award: 6:45-9:00, July 9, 2024**  
**Sternbräu Restaurant: Griesgasse 23, 5020 Salzburg**  
**Peter Song & Yichuan Zhao**

## **Day 2: July 10, 2024**

### **Parallel Invited Sessions 13-16: 9:00-10:45, July 10, 2024**

#### **Invited Session 13: Analysis of multi-outcomes and multi-source data**

**Organizer: Zhezhen Jin. Chair: Liang Li. Room: HS 414**

Xiaonan Xue: Jointly modeling of sleep variables that are objectively measured by wrist actigraphy

Yongzhao Shao: Assessing heterogeneous effects of biomarkers on multi-outcomes in a competing-risk survival analysis

Shanshan Ding: Nonconvex-regularized integrative sufficient dimension reduction for multi-source data

Yun Li: Impact of Unmeasured Confounding on Clustered Data Analyses

#### **Invited Session 14: Recent Development of Statistical Methods for Complex Survival Data in Medical Studies**

**Organizer: Yanqing Sun. Chair: Sebastian Fuchs. Room: HS 403**

Wenqing He: Parametric and semiparametric estimation methods for survival data under a flexible class of models

Yanqing Sun: Regression analysis of semiparametric Cox-Aalen transformation models with partly interval-censored data

Dung-Tsa Chen: How adverse events data in cancer clinical trial could be utilized by statistical methods as a potential biomarker in predicting clinical outcomes

Grace Yi: Graphical proportional hazards measurement error models

#### **Invited Session 15: Recent Advances in Neuroimaging Analysis**

**Organizer: Lexin Li. Chair: Shuangge Ma. Room: HS 401**

Hernando Ombao: Overview of Functional Dependence in Brain Networks

Jaroslav Harezlak: Novel penalized regression method applied to study the association of brain functional connectivity and alcohol drinking

Haoda Fu: LLM Is Not All You Need. Generative AI on Smooth Manifolds

Lexin Li: Kernel Ordinary Differential Equations

#### **Invited Session 16: The integration of high dimensional data in joint models**

**Organizer: Virginie Rondeau. Chair: Dimitris Rizopoulos. Room: HS 402**

Pedro Miranda Afonso: A fast approach to analyzing large datasets with joint models for longitudinal and time-to-event outcomes

Cecile Proust Lima: Analysis of multivariate longitudinal and survival data: what about random forests?

Denis Rustand: Efficient Inference for Joint Models of Multivariate Longitudinal and Survival Data Using INLAjoint

Manel Rakez: Evolution of breast density over time and its impact on breast cancer diagnosis during screening

**Break 10:45-11:00, July 10, 2024**

**Parallel Invited Sessions 17-20: 11:00-12:45, July 10, 2024**

**Invited Session 17: Recent developments in Survival Analysis and Statistical Machine Learning**

**Organizer: Gang Li. Chair: Gang Li. Room: HS 402**

Xiaowu Dai: Kernel ordinary differential equations

Douglas Schaubel: Dynamic Risk Assessment by Landmark Modeling of the Restricted Mean Survival Time

Ying Lu: Using the Desirability of Outcome Ranking (DOOR) Approach to Construct Multicomponent Endpoints

Yuhua Zhu: Continuous-in-time Reinforcement Learning

**Invited Session 18: New developments for analyzing EHR and other observational data**

**Organizer: Shuangge Ma. Chair: Cecile Proust-Lima. Room: HS 401**

Hao Mei: Clinical Human Disease Networks with Healthcare Administrative Claims Data

Shuangge Ma: Heterogeneous Network Analysis of Disease Clinical Treatment Measures via Mining Electronic Medical Record Data

Kai-Yuan Hsiao: Few-shot learning of Tabular Medical Records with Large Language Models

**Invited Session 19: Dependence Modeling**

**Organizer: Wolfgang Trutschnig & Sebastian Fuchs. Chair: Wolfgang Trutschnig. Room: HS 414**

Damjana Kokol Bukovsek: Exact upper bound for bivariate copulas with a given diagonal section

Nik Stopar: Infima and Suprema of Multivariate Cumulative Distribution Functions

Jonathan Ansari: A model-free multi-output variable selection

Patrick Langthaler: Quantifying and estimating dependence via sensitivity of conditional distributions

### **Invited Session 20: Extreme value analysis.**

**Organizer: Judy Wang. Chair: Elizabeth Juarez-Colunga. Room: HS 403**

Olivier Wintenberger. On the asymptotics of extremal blocks cluster inference

Sebastian Engelke: Machine learning beyond the data range: an extreme value perspective

Tiandong Wang: Testing for Strong VS Full Dependence

Chen Zhou: Tail copula estimation for heteroscedastic extremes

**Lunch 12:45-1:45, July 10, 2024 2024 (FREE for registrants)**

### **Parallel Invited Sessions 21-24: 1:45-3:30, July 10, 2024**

#### **Invited Session 21: Dynamic Prediction**

**Organizer: Jessica Barrett. Chair: Jessica Barrett. Room: HS 402**

Hein Putter: Dynamic prediction with many biomarkers: combining landmarking 2.0 with multivariate Functional Principal Component Analysis

Dimitris Rizopoulos: Optimizing Dynamic Predictions from Joint Models Using Super Learning

Daniilo Alvares: A two-stage approach for Bayesian joint modelling of competing risks and multiple longitudinal outcomes

Liang Li: Backward Joint Model for the Dynamic Prediction of Multivariate Longitudinal and Survival Outcomes

#### **Invited Session 22: Multivariate and Complex Longitudinal Data**

**Organizer: Georg Zimmermann. Chair: Georg Zimmermann. Room: HS 403**

Geert Molenberghs: A Broad Framework for Likelihood Alternatives, in View of Small, Very Large, and Variable-Size Studies with Multivariate and/or Repeated Measures

Frank Konietschke: Statistical Planning and Evaluation of Translational Trials

Somnath Datta: Specialized Statistical Analyses of Iowa Fluoride Study Data

Kelly van Lancker: Ensuring valid inference for Cox hazard ratios after variable selection

### **Invited Session 23: Topics in Advanced Multi-outcome Data Analysis**

**Organizer: Lei Liu. Chair: Lei Liu. Room: HS 401**

Chong He and Dongchu Sun: Bayesian Analysis of Multivariate One-Way ANOVA Model

Donglin Zeng: Fusing Individualized Treatment Rules Using Auxiliary Outcomes

Yuanjia Wang: A Hierarchical Random Effects State-space Model for Multi-channel EEG Data

Haibo Zhou: Semiparametric regression analysis of case-cohort studies with multiple interval-censored disease outcomes

### **Invited Session 24: General topics in multi-outcome data**

**Organizer: Zhezhen Jin. Chair: Yichuan Zhao. Room: HS 414**

Xuwen Lu: Variable Selection in Joint Frailty Model of Recurrent and Terminal Events with Diverging Number of Covariates

Yingwei Paul Peng: Joint Analysis of Longitudinal Ordinal Categorical Item Response Data and Survival Times with Cure Fraction

Yuping Wang: Hierarchical variable clustering based on the predictive strength

Nicolas Dietrich: Revisiting the Williamson transform in the context of multivariate Archimedean copulas

**Break 3:30-3:45, July 10, 2024**

### **Parallel Contributed Sessions 5-8: 3:45-4:45, July 10, 2024**

**Contributed Session 5: Survival Analysis in Practice.**

**Chair: Hao Mei. Room: HS 402**

Peyton Smith. Improving Polygenic Risk Scores for Alzheimer's Disease

Merle Munko. Surviving the multiple testing problem: RMST-based tests in general factorial designs

Wieske Katharina de Swart. A Comparative Study of Methods for Survival Analysis with Longitudinal Data

**Contributed Session 6: Nonparametric Methods**

**Chair: Paul Peng. Room: HS 403**

Jonas Beck. Combining Stochastic Tendency and Distribution Overlap Towards Improved Nonparametric Effect Measures and Inference

Lukas Mödl. Wild Bootstrapping the (asymptotic) Joint Distribution of Wilcoxon-Mann-Whitney Test Statistics

Elizabeth Juarez-Colunga. Application of Bayesian non-parametric modeling to longitudinal seizure data

**Contributed Session 7: Multiple Outcome Analysis**

**Chair: Donglin Zeng. Room: HS 401**

Taban Baghfalaki. Dynamic Prediction through Joint Modeling of Longitudinal Markers and Time-to-Event Data: A new Bayesian Two-Stage Approach

Tiphaine Saulnier. Joint analysis of disease progression markers and death using individual temporal recalibration

L. Courcoul. A flexible location-scale joint model to study the effect of blood pressure variability on competing events

H. Vermeulen. Analysis of proliferation assay data for immunomonitoring: A bivariate modelling approach

**Contributed Session 8: Applied Bayesian Analysis**

**Chair: Chong He. Room: HS 414**

Sangita Kulathinal. Bayesian Hidden Markov Model for Natural History of Colorectal Cancer: Handling Misclassified Observations, Varying Observation Schemes and Unobserved Data

Daniel J Phillips. Multiple imputation for joint modelling of COVID-19 antibody decay and risk of infection

Weining Shen. Bayesian biclustering and its application in education data analysis

**Break 4:45-5:00, July 10, 2024**

**IBS-ROeS Keynote Speech II: 5:00-6:00, July 10, 2024**

**Room: HS 401**

**Chair: Arne Bathke**

**Markus Pauly: Loosing sight of the forest for the trees? On theoretical and numerical results for Random-Forest-type methods**

**Closing Remarks: 6:00-6:10. July 10, 2024**

**Room: HS 401**

**Lei Liu and Virginie Rondeau**