



gmds

Deutsche Gesellschaft für
Medizinische Informatik,
Biometrie und
Epidemiologie e.V.

Summer Academy

23.-26.9.2024, Schloss
Fürstenried, München

3 parallel Hands-On Workshops á 20 Participants:

Workshop 1:
**Modeling – Analysis of
longitudinal data**

Speaker:

Dr. Marietta Kirchner,
University Medical Center
Heidelberg
Dr. Alexandra Lauer,
Boehringer Ingelheim

**Workshop 2: Innovative
Concepts in Clinical
Trials: From Estimands to
external controls**

Speaker:

Prof. Dr. Tim Friede,
University Medical Center
Göttingen
Dr. Simon Newsome,
Novartis
Dr. Tobias Bluhmki, BMS

Workshop 3:
**Use of AI and ML in
Statistics, with a focus on
application,
interpretation and small
data challenges**

Speaker:

Dr. Halimu Haliduola,
Alvotech
Dr. Moritz Hess,
University of Freiburg

Three cross-topic presentations:

Estimands; Potential and risks of AI; Registry studies and legal implications

Optional „Get together“ on Monday and visit to
Octoberfest on Thursday

For further questions, reach out to:

gmdsummeracademy2024@gmail.com



Program

Monday, 23.9.2024

Arrival and Get Together (optional)

Tuesday, 24.9.2024 – Thursday, 26.9. noon

Workshop 1

Introduction to longitudinal data

- Exploring and visualizing repeatedly measured observations
- Assessing and handling of missing data

Mixed models for repeated measurements

- Modeling techniques using R packages {mrmr} and {emmeans}
- sensitivity analyses to assess the impact of missingness

Generalized Linear Mixed Models (GLMM)

- logistic regression with repeated measures

Workshop 2

Estimands and estimand aligned estimation

- Introduction to estimands
- Estimand-aligned estimation
- Bridging estimands and causal inference

Innovative Designs

- Overview: adaptive designs, platform trials and Bayesian approaches
- Competing statistical approaches

External controls

- Overview on types and necessity of external controls
- Statistical procedures in to quantify treatment effects
- Overview on methods for bias detection/quantification

Workshop 3

Deep generative models (DGM)

- Introduction to DGMs
- Fitting variational autoencoder (VAE) to high dimensional data

Interpretation of DGMS

- Approaches for model-based and post-hoc interpretability
- Adding structural requirements for organizing the latent representations learned by a DGM

Performance of DGMs in small samples

Missing data handling with machine learning

- Realistic missing data scenarios (mixture of MAR and MNAR)
- Accurate individual prediction
- Handle MNAR with imbalanced learning

Thursday, 26.9.2024 afternoon

Visit to Oktoberfest (optional)

Registration

For registration use the link or scan the QR code

<https://forms.gle/MDVBV4C6CAVmQGDE6>



Location and Directions

Schloss Fürstenried, Forst-Kasten-Allee 103, 81475 München

Participation fees

		Students [1]	Academia	Industry
GMDS Member [2, 3]				
	Full stay	220	350	580
	Day Guests (excl. overnight stay)	120	230	400
Non-members [3]				
	Full stay	290	450	680
	Day guests	160	280	450

[1] First-time students in a Bachelor's or Master's degree program or in a state examination program; proof of student status via certificate of enrollment required

[2] Proof of membership via GMDS membership number required

[3] The participation fees include accommodation and full board or breakfast and snack on the last day; for day guests full board or breakfast and snack on the last day

Organizing team:

Dr. Anika Grosshennig, PD Dr. Verena Hoffmann, Dr. Katrin Kupas, Dr. Nicole Rüksamen, Prof. Dr. Antonia Zapf

gmdssummeracademy2024@gmail.com