Forschungsgruppe Finanz- und Versicherungsmathematik
TUM School of Computation, Information and Technology
Technische Universität München

Announcement WiSe 2024/25

Lecture in Mathematical Finance

Advanced Seminar

U-statistics and Bootstrap

Prof. Dr. Aleksey Min

Area: / Modulnr.: Mathematical Finance/ MA6015

Content: Maximum mean discrepancy is a popular measure in machine learning community. Asymptotic distribution of estimators for this measure can be established with U-statistics. Four bachelor students will present classical asymptotic theory of U-statistics from the book by Koroljuk and Borovskich. Four master students will present advanced materials from the selected papers.

Continued next Semester: No

Audience: 4 bachelor students and 4 master students

Prerequisite: For bachelor students-MA0009, for master students-MA3408, advanced knowledge of probability and statistics is recommended

Literature:

1. Koroljuk, V and Borovskich, Yu. (1994). *Theory of U-statistics.* Springer Science + Business Media, B. V.
Springer-Link: https://link.springer.com/book/10.1007/978-94-017-3515-5

2. Bickel, P. and Freedman, D. (1981). Some asymptotic theory for the bootstrap. *Annals of Statistics, 9(6).*
DOI: https://doi.org/10.1214/aos/1176345637

3. Arcones, M. and Gine, E. (1992). On the bootstrap of U and V statistics. *Annals of Statsitics, 20(2).*
DOI: https://doi.org/10.1214/aos/1176348650

4. Arcones, M and Gine, E. (1994). Limit theorems for U-processes. *Annals of Probability, 21(3).* DOI: https://doi.org/10.1214/aop/1176989128

5. Arcones, M and Gine, E. (1994). U-processes indexed by Vapnik Červonenkis classes of functions with applications to asymptotics and bootstrap of U-statistics with estimated parameters. *Stochastic processes and their Applications, 52 (1).*
DOI: https://doi.org/10.1016/0304-4149(94)90098-1

Certificate: 3 CP

Seminar information: The preliminary online-meeting to the seminar (Online Seminar vorbesprechung) will take place on **June 20, at 18:00** in ZOOM. Please write an e-mail to **min@tum.de** to get an access to this ZOOM-meeting.