ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to the Doctoral Seminar

Marisa Mohr, M.Sc.
Universität Lübeck

"Learning from Up and Downs: Multivariate Ordinal Pattern Representations for Time Series"

O.0.01 Wednesday, 10 November 2021 10:00 a.m.

Abstract

While classical time series analysis investigates the values of a time series itself, ordinal time series analysis investigates non-parametric mapping into a symbol sequence that reveals the underlying dynamics of the generating dynamical system. Ordinal patterns describe the total order between two or more neighbours in a time series, encoded by permutations. The distribution of ordinal patterns obtained in a time series is the basis for subsequent analyses.

Since the ordinal approach assumes a total ordering, it is only directly applicable to univariate time series and thus challenging to apply in case of real-world applications often dealing with multiple measurements at the same time. This talk presents new methods to extend the concept of total ordering to multivariate time series considering the interdependencies between multiple variables. Besides a theoretical view, this talk gives a practical insight into the use of ordinal patterns in machine learning. For example, in classification most machine learning models require

time-independent features to represent characteristics of a time series for classification, where ordinal representations are an interesting approach.

Michaela Hitz and the Department of Statistics look forward to seeing you at the talk!