Speaker:(Proto. Dr.) Dorota Toczydlowska

Talk Title:

General Framework for Parsimonious Feature Extraction via Linear Projections

Talk Abstract:

We investigate a feature extraction approach that addresses the challenge of dimensionality reduction in the presence of multivariate heavy-tailed and asymmetric distributions in complete and incomplete data setting. We propose a novel generalisation to the t-Student Probabilistic Principal Component methodology which (1) accounts for asymmetric distribution of the observation data, (2) is a framework for grouped and generalised multiple-degree-of-freedom structures, which provides a more flexible framework to model groups of marginal tail dependence in the observation data, and (3) separates the tail effect of the error terms and factors. We discuss statistical properties of their robustness and the applicability of developed frameworks to the financial and insurance problems.

Bio:

Dorota Toczydlowska is a postdoctoral research fellow in School of Mathematical and Physical Sciences at the University of Technology Sydney (UTS). She holds MSc degree in Financial Mathematics at University of Warsaw and will receive her PhD degree in Statistical Science from University College London in 2019. From 2014 to 2017 she was a researcher in Risk Methodology at Nomura International, the industrial partner of her PhD, where she was investigating attribution methodologies for the

interest rate derivatives market. Before joining UTS, she was researching the applicability of AI solutions to various areas of customers journey at Prudential. Her research interests include, but are not limited, to robust feature extraction methodologies and their utilisation in the modelling frameworks with applications to the industry-related problems.