

Talk 6: Katrien Antonio (KU, Leuven)

Title: Machine learning in an expectation-maximisation framework for nowcasting

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Abstract. Information is often only partially observable. In decision making, this may cause under or overestimation of underlying risk. Leveraging the available information to model the complete information is called nowcasting within the literature. In practical nowcasting applications, partial information is often caused by reporting delays. In this paper, we propose an expectation-maximisation framework that uses machine learning techniques to model both the occurrence as well as the reporting process of events. We allow for the inclusion of information specific to the occurrence and reporting periods as well as information related to the entity for which events occurred. Additionally, we demonstrate how deep learning techniques can be adapted for use in a nowcasting application. With simulation experiments, we show that we can effectively model both the occurrence and reporting of events when dealing with high-dimensional covariate information. In the presence of non-linear effects, we show that our methodology outperforms existing expectation-maximisation frameworks that rely on generalised linear models.