

Split conformal prediction and its extensions to non-exchangeable data

Paulo Orenstein¹

¹ IMPA

Machine learning algorithms offer state-of-the-art predictive performance in a variety of domains, but often lack an associated measure of uncertainty regarding its predictions. Split conformal prediction is a leading tool to obtain predictive intervals with virtually no assumptions beyond data exchangeability. This crucial assumption, however, hinders its applicability to many important data, such as time series and spatially dependent processes. In this talk, we will introduce split CP and show how it can be extended to non-exchangeable settings through a small coverage penalty. The proposed framework, based on data decoupling and concentration of measure inequalities, works more generally than traditional split CP, and experiments corroborate our coverage guarantees even under highly dependent data. This is joint work with Roberto Imbuzeiro Oliveira, Thiago Ramos and João Vitor Romano.