colmea

Colóquio Interinstitucional
Modelos Estocásticos e Aplicações

Quarta-feira, 15 de junho de 2022

Programa

14:00 – 15:00 – Paulo Orenstein (IMPA)

Split conformal prediction and its extensions to non-exchangeable data

Machine learning algorithms offer state-of-the-art predictive performance in a variety of domains, but often lack an associated measure of uncertainty quantification. 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 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.]

15:20 – 16:50 – Ivailo Hartarsky (Université Paris-Dauphine)

Universality in bootstrap percolation and kinetically constrained models

The paradigmatic 2-neighbour bootstrap percolation model is the following cellular automaton. Given a set of infected sites in $\mathbb{Z}^d$, we iteratively infect each site with at least 2 infected neighbours, while infections never heal. We are then interested in whether and when the origin becomes infected under this dynamics starting from an i.i.d. Bernoulli initial infection. There is a naturally associated stochastic non-monotone model: the Fredrickson-Andersen 2-spin facilitated one, in which the state of each site is resampled to a Bernoulli variable at rate 1, provided it has at least 2 infected neighbours. Of course, many related models have been considered, replacing the 2-neighbour constraint by an increasing local translation-invariant constraint (e.g. both the North and East neighbours are infected). In this talk we will overview recent universality results for this class of bootstrap percolation and its non-monotone stochastic counterpart called kinetically constrained models. The outcome is a classification of all rules in terms of the scaling of the infection time of the origin when the density of infections approaches a possibly degenerate critical value.

17:00 – Discussão e lanche!

Local

Sala de reuniões do Decanato do CTC

12 º andar do prédio Cardeal Leme

PUC-Rio, Gávea

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