

PROBABILITY SEMINAR

Title: Context Tree Estimation for Stationary Processes

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Time: 2:30pm

Place: Room MAT-A(Miniauditorium)

Abstract: Consider a stationary Markov Chain $(X_t)_{t \in \mathbb{Z}}$ of order k on a finite space. As the order of the Markov Chain increases, the number of free parameters grows exponentially. Such Markov Chains with full parameters are not always appropriate to work from a statistical point of view. A more parsimonious description is possible if the strings determining the conditional probabilities, known in the literature as contexts, are of variable length and can be shorter than the order k .

In this seminar, we will discuss about context tree estimation for not necessarily Markov processes. We will present the Context algorithm, the BIC estimator and a modified version of the Context algorithm proposed by Galves and Leonardi (2008).

References

- [1] Bühlmann, P., Wyner, A. J., Variable length Markov chains, *Ann. Statist.* 27: 480-513, 1999.
- [2] Csiszár, I. and Talata, Z., Context tree estimation for not necessarily finite memory processes, via BIC and MDL, *IEEE Trans. Inform. Theory* 52, Number3, 1007-1016, 2006.
- [3] F. Ferrari and A. Wyner, Estimation of general stationary processes by variable length Markov chains, *Scand. J. Statist.* 30, no. 3, 459-480, 2003.
- [4] Galves, Antonio. Leonardi, Florencia., Exponential inequalities for empirical unbounded context trees, *Progress in Probability* 60, 257-270, 2008.
- [5] Rissanen, J., A universal data compression system, *IEEE Trans. Inform. Theory* 29(5): 656-664, 1983.