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PhD Dissertation Proposal Presentation

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Recursive Kernel Estimation for Stationary Time Series

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ABSTRACT

The kernel technique has attracted lots of attention in estimation since it was first proposed by Rosenblat (1956). However, when a new observation comes, classical methods require updating on all the past points which is not computationally efficient. One way to tackle this is to use its recursive counterpart which has been studied extensively recently. The recursive property is useful particularly in large sample sizes since the estimate can be easily updated with each additional observation. This is especially relevant in a time series context where iid assumptions usually fail.

However, Most of the research is done under iid or strong mixing settings, whereas the mixing condition is not easy to verify. In this talk, we investigate the kernel estimation under the new framework of predictive dependence measures by Wu (2005) which are directly related to the data-generating mechanisms of underlying processes. Asymptotic normality and uniform almost sure convergence rate are established. Both Short Range Dependent (SRD) and Long Range Dependent (LRD) cases including FARIMA(p,d,q) are considered. We will also discuss what to explore as future works.