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Law of Large Numbers and Central Limit Theorem under Uncertainty of Probability Distributions

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How to calculate the essential uncertainty of probability distributions hidden behind a real data sequence is a theoretically and practically important challenging problem.

Recently some fundamentally important progresses have been achieved in the domain of law of large numbers (LLN) and central limit theorem (CLT) with a much weaker assumption of independence and identical distribution (i.i.d.) under a sublinear expectation.

These new LLN and CTL can be applied to a significantly wide classes of data sequence to construct the corresponding optimal estimators. In particular, many distribution uncertainties hidden behind data sequences are able to be quantitatively calculated by introducing a new algorithm of phi-max-mean type.

In this talk, I take some typical examples to provide a more concrete explanation of the above mentioned LLN and CLT, the key idea of their proofs, as well as the new phi-max-mean estimators.

Summary

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