

Determinantal Point Processes in Machine Learning

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Determinantal point processes are a very powerful tool in probability theory, especially for integrable systems, because they allow to get very concise closed form formulas and simplify a lot of computations. This is one reason why they have become very attractive in machine learning. Another reason is that, when parametrized by a symmetric matrix, they allow to model repulsive interactions between finitely many items; They were even introduced as fermionic point processes by Odile Macchi in statistical physics in the 70's, in order to describe particles that tend to repel each other within same energy states. In this talk, I will define these point processes, give a few examples and properties, and list a few challenges that they pose in machine learning theory.

Orateur: Prof. BRUNEL, Victor-Emmanuel (ENSEA/CREST)