Dipartimento di Statistica e Metodi Quantitativi

February 26, 2019, 14:30 – 15:30
Aula Seminari 4026 (edificio U7, 4° piano)
Via Bicocca degli Arcimboldi, 8 – 20126 Milano

Distributionally Robust Stochastic Optimization with Wasserstein Distance

Professor Anton Kleywegt, Georgia Tech, ISyE

There are various approaches to optimization under uncertainty. For example, the robust optimization approach specifies constraints that must be satisfied for all values of the uncertain variables in a chosen uncertainty set. This is a reasonable approach for many applications, but in other applications it has several shortcomings, such as potentially being overly conservative (it hedges against the worst possible outcome of the uncertain variables in the chosen uncertainty set), being sensitive to the somewhat arbitrary choice of uncertainty set, and not taking into account available data that have some relevance for the values of the uncertain variables that should be hedged against. Another example is the stochastic optimization approach that models uncertain variables as random variables with known probability distributions. In practice the true probability distribution may not be known, and in some problems there will not be multiple replications of a random variable with the same distribution, so that the notion of a true probability distribution does not even apply. Distributionally robust stochastic optimization is an approach to optimization under uncertainty in which one hedges against a set of probability distributions, possibly taking into account available data. This seems to be a reasonable approach to optimization under uncertainty for many applications. The talk will motivate the use of Wasserstein distance for distributionally robust stochastic optimization and present a number of results for distributionally robust stochastic optimization with Wasserstein distance.

For further information: **asmerilda.hitaj1@unimib.it**