

AGCO Seminar

Speaker: Sebastián Perez-Salazar, Rice University, USA.

Title: The IID Prophet Inequality with Limited Flexibility.

Abstract:

In online sales, sellers usually offer each potential buyer a posted price in a take-it-or-leave fashion. Buyers can sometimes see posted prices faced by other buyers, and changing the price frequently could be considered unfair. The literature on posted price mechanisms and prophet inequality problems has studied the two extremes of pricing policies, the fixed price policy and fully dynamic pricing. The former is suboptimal in revenue but is perceived as fairer than the latter. This work examines the middle situation, where there are at most k distinct prices over the selling horizon. Using the framework of prophet inequalities with independent and identically distributed random variables, we propose a new prophet inequality for strategies that use at most k thresholds. We present asymptotic results in k and results for small values of k . For $k = 2$ prices, we show an improvement of at least 11% over the best fixed-price solution. Moreover, $k = 5$ prices suffice to guarantee almost 99% of the approximation factor obtained by a fully dynamic policy that uses an arbitrary number of prices. From a technical standpoint, we use an infinite-dimensional linear program in our analysis; this formulation could be of independent interest to other online selection problems.

When: June 14, 3:00 pm.

Where: Sala de Seminario John Von Neuman, CMM, Beauchef 851, Torre Norte.

