EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

Asymptotically Optimal Policies for Multi Armed Bandit Models under Generalized Ranking

ABSTRACT – We study, within a non-parametric framework, the problem of sequential selection with the goal of activating the "best" bandit as frequently as possible, where "best" is defined by some "score" function. We give conditions under which asymptotically optimal policies exist. Explicit solutions are provided for primary examples of interest. These examples include: i) the model in which each population is defined by a Pareto distribution of unknown index and support (hence potentially infinite mean), ii) the model in which each population is defined by a Uniform distribution over some interval, with unknown support, and iii) two models of Normal bandits under specific score functionals of interest: a) minimizing activations of bandits with high variance, for the model of bandits with equal means and unknown variances, b) maximizing activations from bandits with large "tail probability".

Talk based on joint work with Wesley Cowan, Rutgers University.

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SPEAKER BIO – Dr. Michael N. Katehakis is a Professor in the Management Science and Information Systems Department at Rutgers University and chair of the Department. He also holds a courtesy appointment in the Rutgers' New Brunswick Department of Mathematics, and he is the founding director of the Applied Probability and Data Analytics Laboratory at Rutgers. Katehakis is an Associate Editor for the journals: Annals of Operations Research, Mathematics of Operations Research, Naval Research and Logistics, Operations Research Letters, Probability in the Engineering and Informational Sciences. In addition to Rutgers, he has held, often long term visiting, positions at: Stanford University, Columbia University, Stony Brook University, University of Leiden in the Netherlands, the Technion, in Israel, and the National and Kapodistrian University in Greece. He has received several awards including the Fellow award of the INFORMS society, and an elected membership of the International Statistical Institute (ISI).

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3:30PM – 4:50PM
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