



Operations Research Seminar

General Notions of Indexability and the Dynamic Allocation of Individuals to Teams Providing Service

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We develop appropriately generalised notions of indexability for problems of dynamic resource allocation where the resource concerned may be assigned more flexibility than is allowed, for example, in classical multi-armed bandits. Most especially, we have in mind the allocation of a divisible resource (manpower, money, equipment) in cases where its over-concentration would usually be far from optimal. The resulting project indices are functions of both a resource level and a state. They have a simple interpretation as a fair charge for increasing the resource available to the project from the specified resource level when in the specified state. We illustrate ideas by reference to a situation in which a pool of servers are assigned dynamically to one of a collection of service teams, each of which mans a service station. Under the assumption that the service rate delivered is increasing and concave in the team size we demonstrate station indexability for two different models. In a numerical study the proposed greedy index heuristic for allocating servers from the pool to the stations performed outstandingly well in all cases investigated.

Date: Wednesday, August 13, 2008

Time: 15:00-16:00

Location: GL-286