Tactical Optimisation for the Management of Scarce Resources at Busy Airports

Rob Shone   Kevin Glazebrook   Konstantinos Zografos
Lancaster University
Lancaster University Management School, Bailrigg, Lancaster. LA1 4YX
[r.shone, k.glazebrook, k.zografos]@lancaster.ac.uk

The problem of how to reduce the severity of flight delays at airports has become increasingly topical in recent years due to the relentless increase in air traffic growth which has placed the resources of many of the world's busiest airports under seemingly unsustainable pressure. Airports must find ways of adapting to the increasing demand by improving the efficiency of their operations.

At a strategic level, "smoothing" of airport schedules can help to avoid long queues of aircraft waiting to take off or land during peak periods. At a tactical level, airport resources can be managed dynamically in response to observed levels of congestion and weather conditions. More specifically, decisions can be made regarding runway configurations and service priorities for departing and arriving aircraft. This talk will discuss how a hybridized queueing system formulation can be used within a stochastic dynamic programming framework in order to find an optimal policy for the dynamic control of airport resources.