

Appointment scheduling of outpatient healthcare facilities

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In this presentation, I will first provide brief highlights of my research on some applications of operations management in manufacturing (i.e. semiconductor), and transportation industries. In manufacturing, I propose a framework to oversee and integrate local decentralized scheduling algorithms utilized in complex supply chain manufacturing. In the transportation domain, I will discuss analytical models for predicting the allocation to ports and transportation channels of containerized goods imported from Asia to North America. Policy recommendations for governments, transportation and logistics service providers, and importers are provided. (Joint work with Prof. Rob Leachman at U.C. Berkeley)

I will then focus on addressing the challenges of outpatient scheduling in multi-stage healthcare facilities. We consider the availability and compatibility of resources (e.g., staff, doctors, rooms, and recovery beds) with the presence of a variety of patient types. The proposed methods depart from existing literature by optimizing the scheduling of patients by integrating mathematical programming, simulation, and meta-heuristics methods to achieve multi objectives of minimizing the waiting time of patients, the completion time of the facility, and the procedures cancellation. The performance of proposed approaches are analyzed in terms of the solution quality and computation time. The proposed methods are applied to actual data of two healthcare facilities in Canada, and results are reported.