Session 1: Applications of Analytics in Hospital Management 8:35am – 10:10 am

Topic: When Doctors are Most Needed in the Emergency Room: Risk-Adaptive Physician Shift Scheduling

Speaker: Yichuan (Daniel) Ding, McGill University

Time: 9:10am-9:40am

Abstract: In this paper we optimize Emergency Department (ED) physicians' staffing by locally adjusting the shift schedule in order to minimize patients' total waiting cost. We first develop a structural model to infer a patient’s waiting cost perceived by a typical ED physician based on the historical patient sequencing. The estimation results show that a patient’s waiting cost is a piece-wise convex function in her cumulative waiting time. We provide two indices where we find that the essence of this problem lies in comparing the patient mix in the expected busy periods. We characterize our adjustment policy through pathwise analysis of the historical data and offer instructions of implementation in a local ED.