Elective Surgery Scheduling
Considering Time-Dependent Patient Health Conditions

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Surgery is estimated to account for approximately 40% of a hospital’s total revenues and expenses. The quality of elective surgery scheduling directly affects patient outcomes, safety, access, healthcare cost, as well as hospital’s operating costs. The common objectives are to minimize patient wait time and hospital overtime. In this research, we propose an operating room planning problem that considers daily patient health condition. In addition to patient health condition, operating room overutilization is also considered to reduce a hospital’s surgical costs. We formulated the problem as a stochastic MIP and employed the sample average approximation to identify the optimal assignment of surgeries. Numerical results based on a block scheduling case will be discussed.