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| **Lec #** | **Title** | **Note** |
| 1 | Report to the president, better health care and lower costs: accelerating improvement through system engineering | * Representing urgent issues of health care system. * In terms of engineering, they suggest: new payment system, reorganization of data access / analysis, etc |
| The impact of Estimation: A new method for clustering and Trajectory Estimation in Patient Flow Modeling | * Hospital admission scheduling and census control problem |
| An Interpretable Stroke Prediction Model using Rules and Bayesian Analysis | * Build an interpretable decision model for stroke prediction. * Using generative model (= explaining probability of prior/ posterior statements) |
| A Transportation Location-Allocation Model for Regional Blood Banking | * Blood bank location allocation problem via mathematical model (Mixed-Integer Programming) * How to allocate blood banks efficiently while satisfying the requirement of many hospitals |
| 2 | Data Mining in Healthcare and Biomedicine: A Survey of the Literature | * Literature review paper for data mining applications in healthcare related organization * Ex) Fraud detection, Identification and classification at-risk incoming patients. |
| Operations Research in Healthcare: a survey | * Survey of applications using OR methodologies * In specific: Queueing model, simulation, mathematical programming, demand forecasting, planning and allocations |
| Transforming Hospital Emergency Department Workflow and Patient Care | * System optimization approaches for emergency department (ED) management * Proposed an integrated decision support system consisting of machine learning + simulation + optimization * Optimizing workflow for system manager / reducing waiting line for customer to increase their satisfaction level |
| Operations Research Advances Cancer Therapeutics | * Proposed OR techniques for real-time treatment of prostate cancer using brachytherapy * Developed decision making model to determine ‘best’ seed points of the radioactive treatment * Developed computationally efficient algorithm to solve the proposed model |
| Operating room planning and scheduling: A literature review | * Survey paper for OR techniques using in operating room scheduling / capacity planning problems. |
| The Surgical Scheduling Problem: Current Research and Future Opportunities | * Review the general problem of surgical scheduling. |
| Heuristics algorithms for a vehicle routing problem with simultaneous delivery and pickup and time windows in home health care | * Drug/patients delivery vehicle routing problem based on the vehicle routing problem (VRP) model * VRP is well known hard problem, thus they used meta-heuristic (aka, general heuristic) for solving hard problem in order to find the solution within reasonable time. |
| Scheduling logistic activities to improve hospital supply system | * Inventory control in hospital * Proposed mathematical model and solved via meta-heuristic method |
| Forecasting Models of Emergency Department Crowding | * Patients forecasting for Emergency Dept. * Introduced various methods for forecasting |
| Novel Optimization Models for Abnormal Brain Activity Classification | * Proposed new ‘classification’ model for checking abnormality of brain activity. * The brain activity was measured by electroencephalograms (EEGs) which is recorded by a time-series data |
| Optimization based tumor classification from microarray gene expression data | * Applying classification for genetic data : tumor vs normal * Developed mathematical model (mixed integer programming) to classify the data * To solve the hard model, using totally unimodular property. i.e.) if a model has that property, it can be solved efficiently. |
| Predicting Asthma-related Emergency Department Visits using Big Data | * To predict patients visiting based on big-social data (e.g, tweeter , google trends) * They found some relationship between the number of patients, air-pollution level, and relevant tweets. |
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