Data-driven decision making in healthcare systems

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Abstract

Reconstructing a high-dimensional sparse vector from a small number of observations is a well-studied problem in many scientific, economic and engineering disciplines, and a number of tools have been designed to address this problem.

In this talk, I will describe the application of such tools for minimizing rehospitalizations—the admission of a patient to a hospital soon after discharge. Nearly one in every five patients is readmitted within 30 days of their discharge, and the estimated cost of such rehospitalizations to Medicare in 2004 was $17.4 billion. Hospitals aim to avoid rehospitalizations in a number of ways; for example, through patient education programs, follow-up home visits by pharmacists, and by supplying extensive discharge packages. It is important to properly allocate these costly and limited resources. Using electronic health records from a major hospital in the U.S., we have designed a predictive model which identifies patients with the highest risk of being rehospitalized, making it possible to significantly reduce rehospitalization costs.

Joint work with Mark Braverman, Michael Gillam, Mark Smith and Eric Horvitz