Abstract

The use of machine learning techniques in health care decision making allows robust and easily-updated prediction of risk. However, they have not traditionally been used as a tool to minimize that risk. We present a framework that combines inductive learning with optimization techniques to generate a suggested action (or set of actions) that maximizes the patient's chance of a desirable outcome. Two examples are presented: a hospital referral system, and a healthy-lifestyle recommendation for minimization of heart disease risk. The resulting systems facilitate individualized and customizable recommendations for the improvement of medical outcomes.