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Title: Scalable Feature Selection and Its Applications

Abstract:
Extracting meaningful information from data has been well studied by the machine learning and statistics community for building predictive models and tasks of knowledge discovery. However, the growth in the quantity of heterogeneous data generated by today's applications makes many of the state-of-the-art machine learning approaches computationally unfeasible or ineffective due to algorithmic details about their implementation. Such applications include analysis of a vast amount of data generated by social networks, media networks, blogs, healthcare informatics and genomics to name a few. Not only is the cardinality of the data rapidly increasing over time, but also the dimensionality. Therefore, the development of algorithms that can: (i) seamlessly cope with extraction of meaningful information, (ii) adapt parameters of a learning algorithm when new data become available, and (iii) can be feasibly implemented on large volumes of data are paramount to the success of machine learning and data mining over the next decade. This talk introduces the concepts and problems associated with producing scalable feature selection algorithms for applied machine learning. In particular, those algorithms that are responsible for extracting meaningful information from data with large dimensionality, as well as algorithms that learn to make accurate predictions in uncertain environments. Furthermore, this talk will discuss applications in the life sciences and cybersecurity where such algorithms can be beneficial to a scientist analyzing the data.