

Promise and Peril in Machine Learning (Abstract)

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Abstract

Machine learning as a research topic started as a subfield of artificial intelligence several decades ago but has grown to become a major area within computer science in its own right. In particular, in the past few years machine learning has played a key role in application areas such as computer vision, speech recognition, Web search and advertising, and more. The field is enjoying continued attention with the resurgent interest in neural network models and the broad interest outside computer science in topics such as data science and “big data”. In this talk we will discuss some of the reasons behind the success of machine learning, including the implicit adoption of ideas from statistics, the development of scalable optimization methods, and the use of very large labeled data sets. In addition to the success stories we will also pay attention to limitations and failure modes of existing approaches such as the limited ability of current models to generalize to new situations. The talk will conclude with some speculative guesses at where research and applications in machine learning might be headed over the next decade.

Biography

Padhraic Smyth is a Professor in the Department of Computer Science, with a joint appointment in the Department of Statistics, at the University of California, Irvine (UCI). He is also the director since 2014 of the UCI Data Science Initiative. His research interests include machine learning, data mining, pattern recognition, and applied statistics and he has published over 160 papers on these topics. Padhraic received a first class honors degree in Electronic Engineering from National University of Ireland (Galway) in 1984, and the MSEE and PhD degrees in Electrical Engineering from the California Institute of Technology. He is an ACM Fellow (2013), a AAAI Fellow (2010), and a recipient of the ACM SIGKDD Innovation Award (2009). He is co-author of the text *Modeling the Internet and the Web: Probabilistic Methods and Algorithms* (with Pierre Baldi and Paolo Frasconi in 2003) and *Principles of Data Mining*, MIT Press (with David Hand and Heikki Mannila in 2001).