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AI, Information, and the Future of Machine Learning

Jeffrey A. Bilmes
Professor, Department of
Electrical Engineering
The University of
Washington



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40 St. George Street

Abstract

Machine learning involves the extraction and aggregation of information from data. The ability to extract useful information from increasingly larger datasets, however, is becoming decreasingly cost-effective. This is because data is getting bigger at a rate that computational improvements are becoming more expensive to continue to match. A common strategy to overcome such difficulties is either to discard data or to randomly subsample, but this is not sustainable if machine learning is to continue to improve by exploiting all useful information in available data. In this talk, we will discuss how to be more efficient in representing information in data through the process of summarization. In particular, we will see how submodular and supermodular functions can model information in data, and how these can be used to produce theoretically justified but still practical algorithms for various forms of data summarization. This will include approaches that summarize data before training takes place, and also some new tactics that learn and summarize simultaneously.

Biography

Jeffrey A. Bilmes is a professor at the Department of Electrical Engineering at the University of Washington, Seattle Washington. He is also an adjunct professor in Computer Science & Engineering and the department of Linguistics. Prof. Bilmes is the founder of the MELODI (MachinE Learning for Optimization and Data Interpretation) lab here in the department. Bilmes received his Ph.D. from the Computer Science Division of the department of Electrical Engineering and Computer Science, University of California in Berkeley. He was also a researcher at the International Computer Science Institute, and a member of the Realization group there.



Computer Science
UNIVERSITY OF TORONTO

*For additional information,
please contact Ashton Anderson at
ashton@cs.toronto.edu*