Learning with Mixtures of Trees

Marina Meilă   MMP@STAT.WASHINGTON.EDU

Michael I. Jordan   JORDAN@CS.BERKELEY.EDU

Abstract

In an increasingly digital world of entertainment that relies heavily on the quality of the user experience, the ability for service providers to provide effective and relevent recommendations for users only follows suit. Leveraging users' ratings of movies and information about the movies themselves in the graph space can provide highly tailored recommendations that when used in an end product, allow for better experiences for all users. We present several graph based models that attempt to leverage movie ratings, genre information (and subsequent score) for movie recommendations, starting with foundational knowledge graph embedding approaches, and expanding to approaches that allow for more information to be incorporated in the graph, and thus, provide higher quality recommendations. An addition novel to many approaches explored in the literature is the use of a

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1. Introduction

Probabilistic inference has become a core technology in AI, largely due to developments in graph-theoretic methods for the representation and manipulation of complex probability distributions (Pearl, 1988). Whether in their guise as directed graphs (Bayesian networks) or as undirected graphs (Markov random fields), *probabilistic graphical models* have a number of virtues as representations of uncertainty and as inference engines. Graphical models allow a separation between qualitative, structural aspects of uncertain knowledge and the quantitative, parametric aspects of uncertainty...

Remainder omitted in this sample. See http://www.jmlr.org/papers/ for full paper.

References

Judea Pearl. *Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference.* Morgan Kaufman Publishers, San Mateo, CA, 1988.