**LITERATURE SURVEY**

**1) Learning topic models–going beyond svd**

**AUTHORS:** S. Arora, R. Ge

Topic Modeling is an approach used for automatic comprehension and classification of data in a variety of settings, and perhaps the canonical application is in uncovering thematic structure in a corpus of documents. A number of foundational works both in machine learning and in theory have suggested a probabilistic model for documents, whereby documents arise as a convex combination of (i.e. distribution on) a small number of topic vectors, each topic vector being a distribution on words (i.e. a vector of word-frequencies). Similar models have since been used in a variety of application areas, the Latent Dirichlet Allocation or LDA model of Blei et al. is especially popular. Theoretical studies of topic modeling focus on learning the model's parameters assuming the data is actually generated from it. Existing approaches for the most part rely on Singular Value Decomposition (SVD), and consequently have one of two limitations: these works need to either assume that each document contains only one topic, or else can only recover the {\em span} of the topic vectors instead of the topic vectors themselves. This paper formally justifies Nonnegative Matrix Factorization (NMF) as a main tool in this context, which is an analog of SVD where all vectors are nonnegative. Using this tool we give the first polynomial-time algorithm for learning topic models without the above two limitations. The algorithm uses a fairly mild assumption about the underlying topic matrix called separability, which is usually found to hold in real-life data. Perhaps the most attractive feature of our algorithm is that it generalizes to yet more realistic models that incorporate topic-topic correlations, such as the Correlated Topic Model (CTM) and the Pachinko Allocation Model (PAM). We hope that this paper will motivate further theoretical results that use NMF as a replacement for SVD -- just as NMF has come to replace SVD in many applications.

**2) Detecting events from continuous media by intermodal collaboration and knowledge use**

**AUTHORS:** N. Babaguchi, S. Sasamori

We propose an event network, which is a structured representation oriented for the contents of continuous media, as well as present two methods of detecting events as the first step to construct the network. We deal with sports TV programs, considering American football as a case study. The first method is simple intermodal collaboration: linking between visual and linguistic (closed caption) streams. Using domain knowledge about state transitions of football games, the second method attempts to extract specific visual objects including the information about contents. The experimental results indicate that both methods are effective for event detection.

**3) Modeling the impact of short-and long-term behavior on search personalization**

**AUTHORS:** P. N. Bennett, R. W. White

User behavior provides many cues to improve the relevance of search results through personalization. One aspect of user behavior that provides especially strong signals for delivering better relevance is an individual's history of queries and clicked documents. Previous studies have explored how short-term behavior or long-term behavior can be predictive of relevance. Ours is the first study to assess how short-term (session) behavior and long-term (historic) behavior interact, and how each may be used in isolation or in combination to optimally contribute to gains in relevance through search personalization. Our key findings include: historic behavior provides substantial benefits at the start of a search session; short-term session behavior contributes the majority of gains in an extended search session; and the combination of session and historic behavior out-performs using either alone. We also characterize how the relative contribution of each model changes throughout the duration of a session. Our findings have implications for the design of search systems that leverage user behavior to personalize the search experience.

**4) Representative photo selection for restaurants in food blogs**

**AUTHORS:** Y.-J. Chang, H.-Y. Lo

Nowadays, people write comments of restaurants and upload related photos to food blogs after visiting there. Developing a mobile application which enables the user to effectively search restaurants from data in these blogs becomes an emerging need. Besides reading the comments, most people will give a glance at food photos of a restaurant and then decide whether to go or what to eat. Therefore, we propose a system to analyze and select representative photos for each restaurant based on blog-platform media. A strong food detection model is trained to retrieve food photos and an aesthetic quality assessment method is utilized to select representative photos. Based on these representative photos, users can more easily have the impression of the restaurant and review the blog in an organized way. The experimental results show that our system can generate better representative photos (i.e. much closer to the users' preferences) than existing blog platforms.

**5) Query based event extraction along a timeline**

**AUTHORS:** H. L. Chieu and Y. K. Lee

In this paper, we present a framework and a system that extracts events relevant to a query from a collection C of documents, and places such events along a timeline. Each event is represented by a sentence extracted from C, based on the assumption that "important" events are widely cited in many documents for a period of time within which these events are of interest. In our experiments, we used queries that are event types ("earthquake") and person names (e.g. "George Bush"). Evaluation was performed using G8 leader names as queries: comparison made by human evaluators between manually and system generated timelines showed that although manually generated timelines are on average more preferable, system generated timelines are sometimes judged to be better than manually constructed ones.