Aspect-based Opinion Mining from Product Reviews

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1 Summary of the Tutorial

"What other people think" has always been an important piece of information for most of us during the decision-making process. Today people tend to make their opinions available to other people via the Internet. As a result, the Web has become an excellent source of consumer opinions. However, it is really difficult for a customer to read all of the reviews and make an informed decision on whether to purchase the product. It is also difficult for the manufacturer of the product to keep track and manage customer opinions. Aspect-based opinion mining is a new research direction that addresses this need. In this tutorial we will cover opinion mining in online product reviews with the focus on aspect-based opinion mining. The tutorial will cover not only general opinion mining and retrieval tasks, but also state-of-the-art methods, challenges, applications, and also future research directions of aspect-based opinion mining.

2 Tutors' Bio and Expertise

Samaneh Moghaddam is a PhD candidate in the school of computer science at Simon Fraser University. Her main research interests include information retrieval, text mining, machine learning, natural language processing, and social network analysis. Samaneh is a senior member of SFU Database and Data mining lab under supervision of Dr. Martin Ester. Her PhD thesis is "Aspect-based Opinion Mining from Online Product Reviews". She has proposed some novel techniques for extracting product aspects and estimating their ratings from product reviews. Samaneh Moghaddam has published several papers in top international conferences such as ACM CIKM, ACM SIGIR, and WSDM. Her publications are mostly related to his research on information retrieval and machine learning models for mining opinion from product reviews.

Martin Ester received a PhD in Computer Science from ETH Zurich, Switzerland, in 1990 with a thesis on knowledge-based systems and logic programming. He has been working for Swissair developing expert systems before he joined University of Munich as an Assistant Professor in 1993. Since November 2001, he has been an Associate Professor, now Full Professor at the School of Computing Science of Simon Fraser University, where he co-directs the Database and Data mining research lab. He has published extensively in the top conferences and journals of his field such as ACM SIGKDD, VLDB, ICDM and ICDE, and his work has been very well-cited. His most famous paper on DBSCAN received more than 2900 citations, and his H-number is 34. His current research interests include social network analysis, recommender systems, opinion mining, biological network analysis and high-throughput sequence data analysis. Martin Ester's interests in applications have resulted in various collaborations with research labs, industry and government agencies.

3 Tutorial Contents

The target audiences of this tutorial will be information retrieval researchers, students who want to make themselves familiar with opinion mining, and practitioners who want to develop state-of-the-art methods for different tasks of opinion mining. Participants will expected to learn the tasks of opinion mining in general as well as methods to mine aspects and ratings from reviews, and will understand the potential and limitations of aspect-based opinion mining and its state-of-the-art methods. The general outline of this tutorial is presented in the following:

- Introduction to Opinion Mining
  - Demands for Opinion Mining
  - Opinion Mining Terminologies
  - Available Data sets
- General Opinion Mining Tasks
  - Subjectivity Classification
  - Sentiment Classification
  - Opinion Quality and Helpfulness Estimation
  - Opinion Spam Detection
  - Opinion Search and Retrieval
  - Opinion Summarization
  - Opinion Question Answering
  - Opinion Mining in Comparative Sentences
  - Aspect-Based Opinion Mining
- Aspect-Based Opinion Mining
  - Feature Based Methods
  - Latent Variable Models
- Applications of Aspect-based Opinion Mining in other IR tasks
- Future Direction