

# Patient's Medication Analysis Using Probabilistic Aspect Mining Model

Sohini Sinha<sup>1</sup>, Shubham Sharma<sup>2</sup> & Ms. Srividhya. S.<sup>3</sup>

<sup>1,2</sup>Student, Department Of Information Technology, SRM University, Tamil Nadu, India

<sup>3</sup>Assistant Professor, Department Of Information Technology, SRM University, Tamil Nadu, India

---

**Abstract:** Merchants selling goods on the Web often ask their customers to review the product that they have purchased from the particular site. As Ecommerce is becoming more and more popular, the number of customer reviews that a product is receiving is increasing at a fast pace. For a popular product the number of reviews can be in hundreds or even thousands. This makes it difficult for a customer to identify which product will be best for them. It makes the manufacturer to track all the records of an individual product. So here also discussion forums are there which will help the patients to identify the drugs. Hence here we developed a Probabilistic Aspect Mining Model (PAMM) for identifying the aspects/ topics relating to a single class or corpus. PAMM has a unique feature in identifying the aspect related to one class rather than finding aspects for all classes simultaneously. In addition, the derived aspects were also assessed by human beings based on different specified perspectives, and PAM was found to be rated the highest.

**Keywords:** Drug Review, Opinion Mining, Aspect Mining, Text Mining, Topic Modelling

## 1. INTRODUCTION

With the fast growth of e-commerce, increasingly a growing number of products are marketed on web, and more people are also buying items from online. In order to boost client's fulfillment as well as shopping experience, it has actually ended up being an unusual technique for online vendors to make it possible for client's evaluations or to share opinions on the products that they have actually acquired. With more and more, a growing number of common individuals ending up being comfy with the internet. An enhancing number of people are composing evaluations. Because of this the variety of evaluations an item obtains boosts swiftly. Hence for this reason we have to efficiently analyze as well as make use of enormous online information resource is a difficulty.

Opinion Mining takes care of the removal of information example favorable as well as unfavorable sentiments from a big piece of data or evaluations authored by individual. Assume that we summarize the evaluation of a particular electronic camera which might have an outstanding picture quality yet bad battery life. Because of this a lot advanced aspect level opinion mining strategies have actually been proposed to extract as well as group the element of a product based upon scores.

Formerly opinion mining usually made use of to deal with popular customer services and products such as garments, publications, digital devices etc. Medical associated things were much less in internet or might be individuals were less worried. So in the current research studies have actually shown that the patients generated contents were useful as well as handy specially for persistent illness. These online forums have actually assisted the patients a lot. Unlike various other items drugs have actually restricted aspects like price, convenience of usage, dosage, efficiency or reliability, adverse effect and so on. There is a little problem in handling the medication reviews as various people will certainly have different views as well as negative effects. It will vary from one another. This hinders some opinion mining approaches based upon vocabularies. Mainly writers do not suggest which aspect they are explaining. They typically offer the signs and symptoms as well as the side effects. The following sums up the feature of drug review.

- Drug Review have a handful kind of aspects.
- Aspects are not discussed clearly as well as extensively
- Description of efficiency, adverse effect as well as individuals experience varies.
- Side effects as well as effectiveness differ from medicine to medicine as well as from one person to another.

## 2. LITERATURE REVIEW

**TITLE** : Topic Sentiment Mixture: Modeling Facets and Opinions in Weblogs  
**AUTHOR** : Matthew Wondra, ChengXiang Zhai

### DESCRIPTION

In this paper, it define the problem of topic-sentiment analysis on Weblogs and propose a novel probabilistic model to capture the mixture of topics and sentiments simultaneously. The proposed Topic-Sentiment Mixture (TSM) model can reveal the latent topical facets in a Weblog collection, the subtopics in the results of an ad hoc query, and their associated sentiments. It could also provide general sentiment models that are applicable to any ad hoc topics. With a specifically designed HMM structure, the sentiment models and topic models estimated with TSM can be utilized to extract topic life cycles and sentiment dynamics. Empirical experiments on different Weblog datasets show that this approach is effective for modeling the topic facets and sentiments and extracting their dynamics from Weblog collections. The TSM model is quite general; it can be applied to any text collections with a mixture of topics and sentiments, thus has many potential applications, such as search result summarization, opinion tracking, and user behavior prediction.

**TITLE** : Opinion Observer: Analyzing and Comparing Opinions on the Web  
**AUTHOR** : Bing Liu, Minqing Hu

### DESCRIPTION

The Web has become an excellent source for gathering consumer opinions. There are now numerous Web sites containing such opinions, e.g., customer reviews of products, forums, discussion groups, and blogs. This paper focuses on online customer reviews of products. It makes two contributions. First, it proposes a novel framework for analyzing and comparing consumer opinions of competing products. A prototype system called *Opinion Observer* is also implemented. The system is such that with a single glance of its visualization, the user is able to clearly see the strengths and weaknesses of each product in the minds of consumers in terms of various product features. This comparison is useful to both potential customers and product manufacturers. For a potential customer, he/she can see a visual side-by-side and feature-by-feature comparison of consumer opinions on these products, which helps him/her to decide which product to buy. For a product manufacturer, the comparison enables it to easily

gather marketing intelligence and product benchmarking information. Second, a new technique based on language pattern mining is proposed to extract product features from Pros and Cons in a particular type of reviews. Such features form the basis for the above comparison. Experimental results show that the technique is highly effective and outperform existing methods significantly.

**TITLE** : A Joint Model of Text and Aspect Ratings for Sentiment Summarization  
**AUTHOR** : Ivan Titov, Ryan MacDonald

### DESCRIPTION

Online reviews are often accompanied with numerical ratings provided by users for a set of service or product aspects. We propose a statistical model which is able to discover corresponding topics in text and extract textual evidence from reviews supporting each of these aspect ratings. Our model achieves high accuracy, without any explicitly labeled data except the user provided opinion ratings. The proposed approach is general and can be used for segmentation in other applications where sequential data is accompanied with correlated signals.

## 3. PROPOSED SYSTEM

In suggested system furthermore people tend to solicit opinion from doctor rather than individuals. Nevertheless current research studies have actually revealed that the patient generated contents are useful as well as important particularly for persistent diseases as well as medications with affecting side effects . Numerous patients wish to obtain even more information from various other patients with comparable problems. They can additionally discuss their experience as well as recommend practical methods to minimize signs and symptoms as well as adverse effect of medications. Unlike basic services or products medications have an extremely limited variety of aspects. There are various other technological aspects such as chemical or molecular aspect , however they are practically not discussed in medication reviews. A problem in handling drug reviews is that that wording and the terminology in describing performance , unfavorable effects as well as individuals experience are extremely mixed. In particular side results are drug dependent: a collection of side effect symptoms for a drug is very unlikely applicable to another drug.

**3.1 ADVANTAGES:**

- The drug is applied to suitable people only.
- To improve good quality of Service.
- To improve the quality of Service of all new drugs applied for people after they are clinically approved for marketing.
- To improve the quality of Service between disease and Medicine.

**3.1 PROPOSED DESIGN**

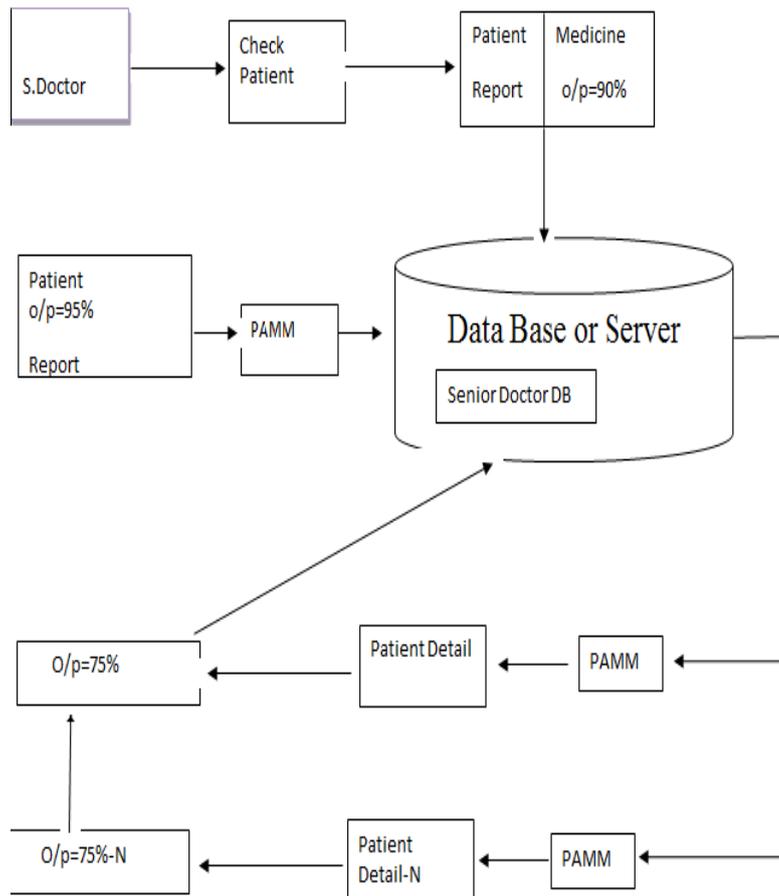


Figure 1: Architecture Diagram

**4. METHODOLOGIES**

**4.1 PATIENT, ADMIN AND DOCTOR REGISTRATION**

Both the doctor, admin and the patient has to register themselves . After registration both will get a user id and password so that they can communicate with each other for further purpose.

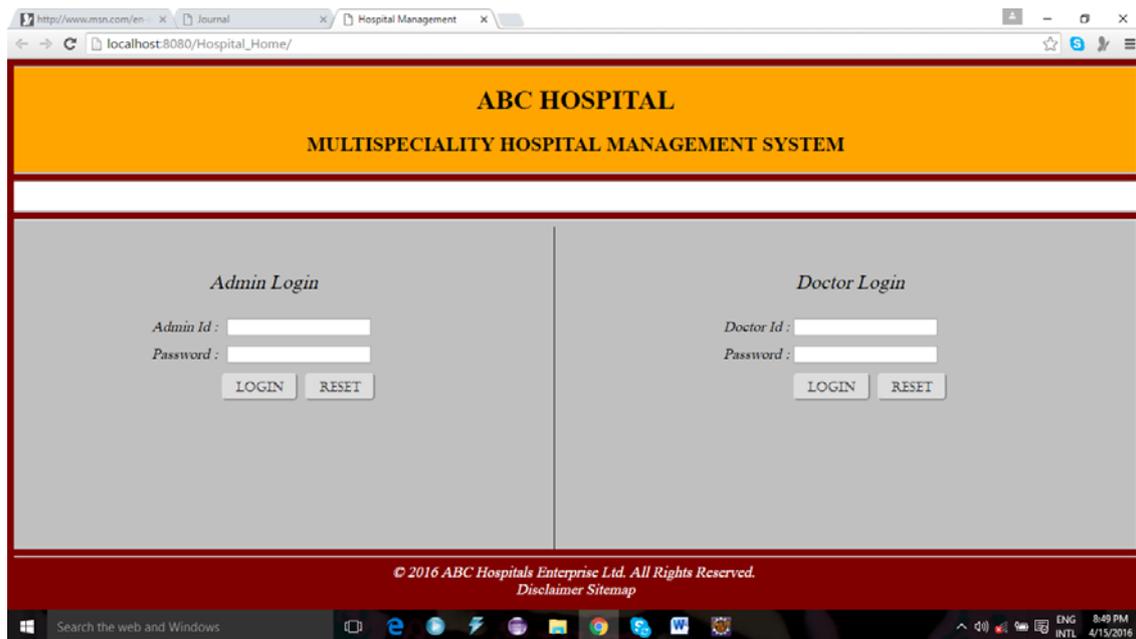


Figure 2: Login Page for Admin and Doctor

#### 4.2 PATIENT DETAILS AND PATIENT TREATMENT

Here the patient will fill up all the mandatory details that are required for the treatment.



Figure 3: Patient Details

#### PATIENT TREATMENT

In patients treatment whatever the doctor will advice that will be mentioned over here.



Figure 4: Patient Treatment

#### 4.3 CENTRALIZED DATABASE

A centralized database is a collection of information at a single location accessible from numerous points in contrast with a distributed database where information is spread out across multiple sites. One advantage of the centralized database is the ability to access all the information in one location. Searches of the

database can be fast because the search engine does not need to check multiple locations to return results. There are a number of ways to set up the centralized database. Multiple programming languages are well suited to database building and companies can also purchase data basing software rather than developing their own.

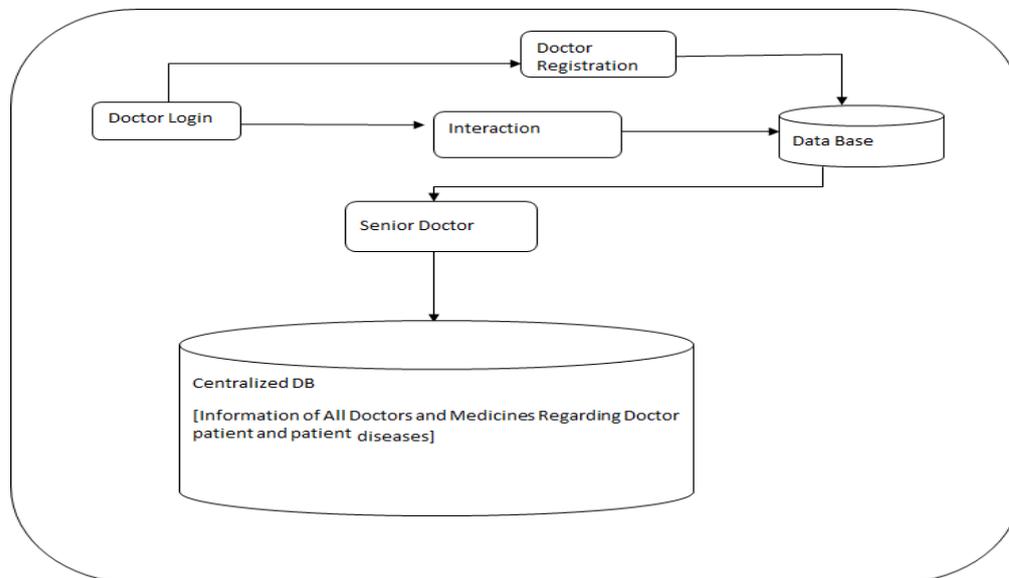


Figure 5: Centralized DataBase

#### 5. RESULTS AND DISCUSSION

Here we see the online drug rating, their effectiveness, the price of rating and whether that

particular drug is available or not. Each patient will provide their satisfactory level and will provide rating against that particular drug. So here Probabilistic Aspect Mining Model will help to

find only one best drug that will be suitable for that particular disease based on patient's ratings or reviews. Here we can even search any medicine

either by medicine name, disease name or symptoms.

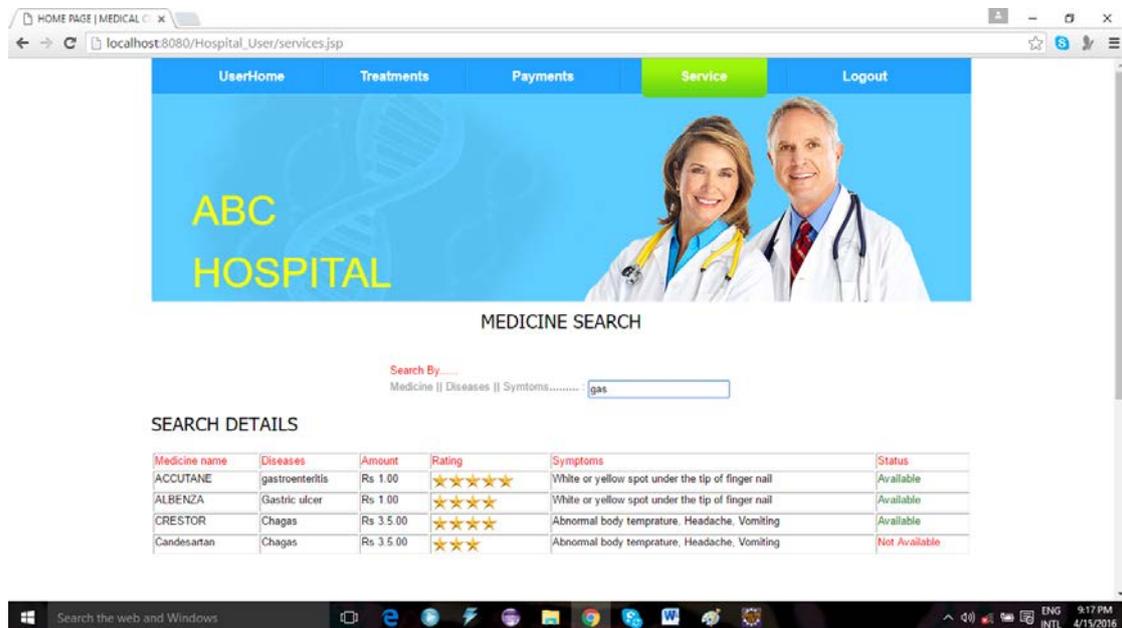


Figure 6: Result Page

## 6. CONCLUSION

Nowadays, online reviews, blogs and discussion forums for different kinds of products and services are pervasive. Extracting information from these substantial bodies of texts is useful and challenging. In particular, it is helpful to identify the aspects of a product that people are happy to with or finding the aspects that may anger customers. As human lifespan becomes longer and our living environment becomes increasingly polluted, medical domain data mining becomes one of the focused research areas. In this paper, we propose PAMM for mining aspects relating to specified labels or groupings of drug reviews.

## 7. FUTURE ENHANCEMENT

Our future work, it is interesting to apply the model to find aspects relating to different segmentation of data such as different age groups or other attributes. It is also useful to work with aspect interpretation as aspects are now represented by a list of keywords. If a few sentences can be extracted or generated automatically to summarize the keywords, interpretation and understanding will be greatly improved

## 8. ACKNOWLEDGEMENT

The success and the final outcome of this project required guidance and assistance from different sources and we feel extremely fortunate to have got this all along the completion of our project. Whatever we have done is largely due to such guidance and assistance and we would not forget to thank them.

We express our sincere thanks to the Head Of the Department, Department Of Information Technology, **Dr.G.VADIVU** for all the help and infrastructure provided to us to complete this project successfully and her valuable guidance.

We owe our profound gratitude to our project guide **Ms.SRIVIDHYA.S** who took keen interest in our project work and guided us all along, till the completion of our project work by providing all the necessary information for developing a good system.

We are thankful to and fortunate enough to get constant encouragement, support and guidance from all the teaching staff of the Department Of Information Technology which helped us in successfully completing our project work. Also, we would like to extend our sincere regards to all non-teaching staffs of the Department Of Information Technology for their timely support.

## **REFERENCES**

- [1] T. O'Reilly, "What is web2.0: design patterns and business models for the next generation of software," University Library of Munich, Germany, Tech. Rep. 4578, 2007.
- [2] D. Giustini, "How web 2.0 is changing medicine," *British Medical Journal*, pp. 1283–1284, 2006.
- [3] M. Hu and B. Liu, "Mining and summarizing customer reviews," in *Proc. 10th ACM SIGKDD Int'l Conf. Knowledge Discovery and Data Mining*, 2004, pp. 168–177.
- [4] B. Pang and L. Lee, "Opinion mining and sentiment analysis," *Foundations and Trends in Information Retrieval*, vol. 2, pp. 1–135, 2008.
- [5] A.-M. Popescu and O. Etzioni, "Extracting product features and opinions from reviews," in *Proc. Conf. on Human Language Technology and Empirical Methods in Natural Language Processing*, 2005, pp. 339–346.
- [6] L. Zhuang, F. Jing, and X. Zhu, "Movie review mining and summarization," in *Proc. 15th ACM Int'l Conf. on Information and Knowledge Management*, 2006, pp. 43–50.