

CHAT REVIEWS

Project Id: 17-066

Software Requirement Specification Report



B.Sc. Special (Honors) Degree in Information Technology

Department of Information Technology

Sri Lanka Institute of Information Technology

Topic Detection for Chat Review

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DECLARATION

I declare that this is my own work and this document does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of our knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Dinesh Lakmal E

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1. INTRODUCTION

This section gives a scope description and overview of everything included in this SRS document. Also, the purpose for this document is described and a list of abbreviations and definitions is provided.

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for the “**Topic Detection**” module for “**Chat Review**” web application. It will illustrate the purpose and complete declaration for the development of topic detection. It will also explain constraints, interface and interactions with other external modules inside the system. This document is primarily intended to be proposed to a customer for its approval and a reference for developing the first version of the system for the development team.

1.2 Scope

The “Topic detection” is one major module for **Chat Reviews** which is algorithm based web application helping user to analyze its particular chat session based on topics, emotions, healthy and personal information sharing.

Mainly topic detection research module will be developed based on machine learning algorithms and clustering algorithms. Using machine learning algorithms this module will be capable of identifying the distribution of the topics along with message count. First it will work with given topics and provide set of analytical data. Then using system generated data it will generate topic changing rate using separate algorithm associated with this topic detection module.

Finally all the analytical data will be displayed graphically in a separate page for the purpose of making the user feel less complicated with this application. Also it will provide user guide to use this system easily and helping user be more understanding about the output that will be generated by this **Topic Detection** module.

1.3 Definitions, acronyms, and abbreviations

Term	Definition
User	Someone who interacts with the web application
CMC	Computer-mediated Communication
NLP	Natural Language Processing
ML	Machine Learning
ASR	Automatic Speech Recognition
IM	Instant Messaging
DESC	Description
RAT	Rational
DEP	Dependency
TAG	A unique, persistent identifier contained in a PLanguage statement [2]
GIST	A short, simple description of the concept contained in a PLanguage statement [2]
SCALE	The scale of measure used by the requirement contained in a PLanguage statement [2]
METER	The process or device used to establish location on a SCALE contained in a PLanguage statement [2]
MUST	The minimum level required to avoid failure contained in a PLanguage statement [2]
PLAN	The level at which good success can be claimed contained in a PLanguage statement [2]
WISH	A desirable level of achievement that may not be attainable through available means contained in a PLanguage statement [2]
DEFINED	The official definition of a term contained in a PLanguage statement [2]

1.4 References

[1] IEEE Software Engineering Standards Committee, “IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications”, October 20, 1998.

[2] Feldt R, ”re_lecture5b_100914”, unpublished.

1.5 Overview

The remainder of this document includes three chapters and appendixes. The second one provides an overview of the system functionality and system interaction with other systems. This chapter also introduces different types of stakeholders and their interaction with the system. Further, the chapter also mentions the system constraints and assumptions about the product.

The third chapter provides the requirements specification in detailed terms and a description of the different system interfaces. Different specification techniques are used in order to specify the requirements more precisely for different audiences.

The fourth chapter deals with the prioritization of the requirements. It includes a motivation for the chosen prioritization methods and discusses why other alternatives were not chosen.

The Appendixes in the end of the document include the all results of the requirement prioritization and a release plan based on them.

2. OVERALL DESCRIPTION

This section will give an overview of the whole **Topic Detection** module. The module will be explained in its context to show how the module interacts with other modules inside the system and introduce the basic functionality of it. It will also describe what type of stakeholders that will use the system and what functionality is available for each type. At last, the constraints and assumptions for the **Topic Detection** will be presented.

2.1 Product perspective

The whole system will consist of four parts

- i) **Topic Detection**
- ii) **Emotion Extraction**
- iii) **Evaluate Healthy**
- iv) **Analysis of personal information sharing**

Each of mentioned parts above will be developed as separate modules and it will be able to customize based on the outcomes required by client end. Also it will be feasible to add more modules and remove modules are allowed. This product would be easily integrated with other chatting application for the purpose of analyzing messages going through the system.

Based on the outcomes, topic detection module will be customized also it comprises of three parts,

- i) Extracting the messages from database and group the messages based on topics using clustering algorithms.
- ii) Find the distribution of the topics and generate analytical data using machine learning algorithms.
- iii) Visualize analytical data.

2.2 Product functions

With this topic detection module the users will be able to identify the topics discussed through the particular chat session. And will be able to view it in a graphical way.

2.3 User characteristics

There is only one type of users that interacts with the **Topic Detection** module: user who wants to analyze the chatting partner and wants to review its particular chat session or its chatting partner.

2.4 Constraints

Since the system uses some APIs regarding to fetch data from Social networks algorithms inside this system have to deal with available data for further classifications and analysis.

The Internet connection is also a constraint for the application. Since the application fetches data from the database over the Internet, it is crucial that there is an Internet connection for the application to function all the time.

2.5 Assumptions and dependencies

- Web server will run 24 hours a day without any interruptions.
- Chat session is based on English language.
- Assumes users are smart enough to use and understand this system.
- Assumes users have latest version of Chrome and Firefox and assumes user does not use Internet Explorer Since Internet Explorer does not support for graphical review interfaces very much.
- Topic detection algorithm execution time is less than 5 seconds.
- Assumes each and every message are belonging to at least one topic given in the system.

Ex: Sports, Education, Politics etc...

3. SPECIFIC REQUIREMENTS

This section contains all of the functional and quality requirements of the Topic Detection. It gives a detailed description of the Topic Detection and all its features.

3.1 External interface Requirements

This section provides a detailed description of all inputs into and outputs from the system and **Topic Detection** module. It also gives a description of the hardware, software and communication interfaces and provides basic prototypes of the user interface.

3.1.1 User interfaces

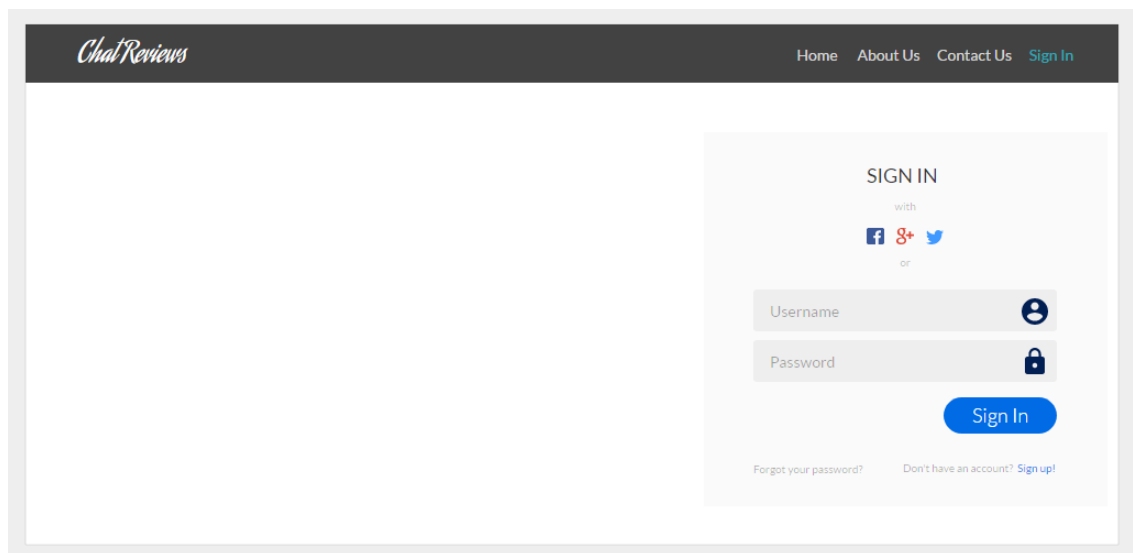


Figure 1 - Login Page

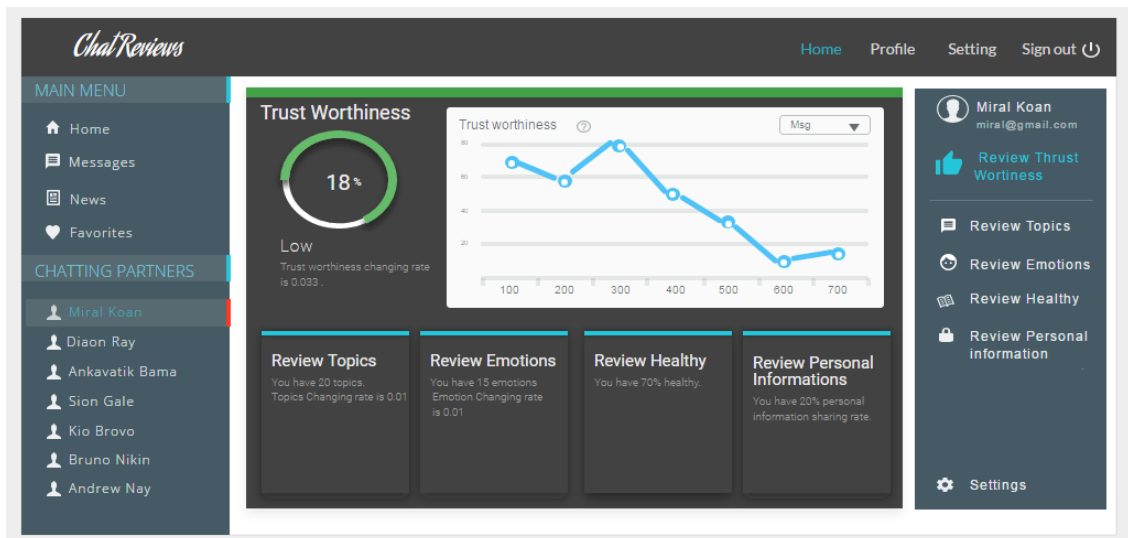


Figure 2 - Home page

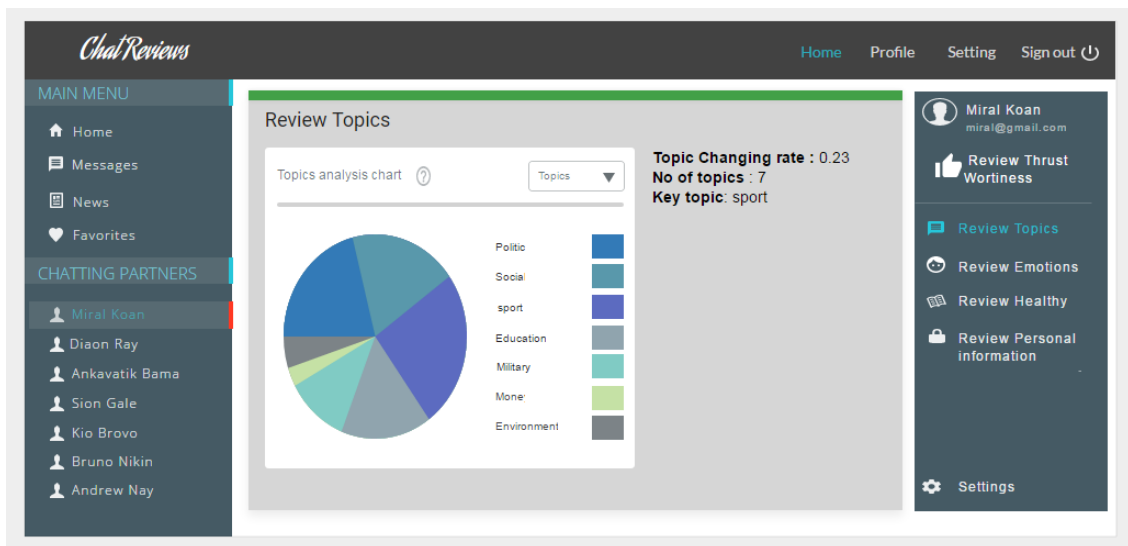


Figure 3 - Topic Reviews page

3.1.2 Hardware interfaces

Since this topic detection module does not associate with any designated hardware, it does not have any direct hardware interfaces.

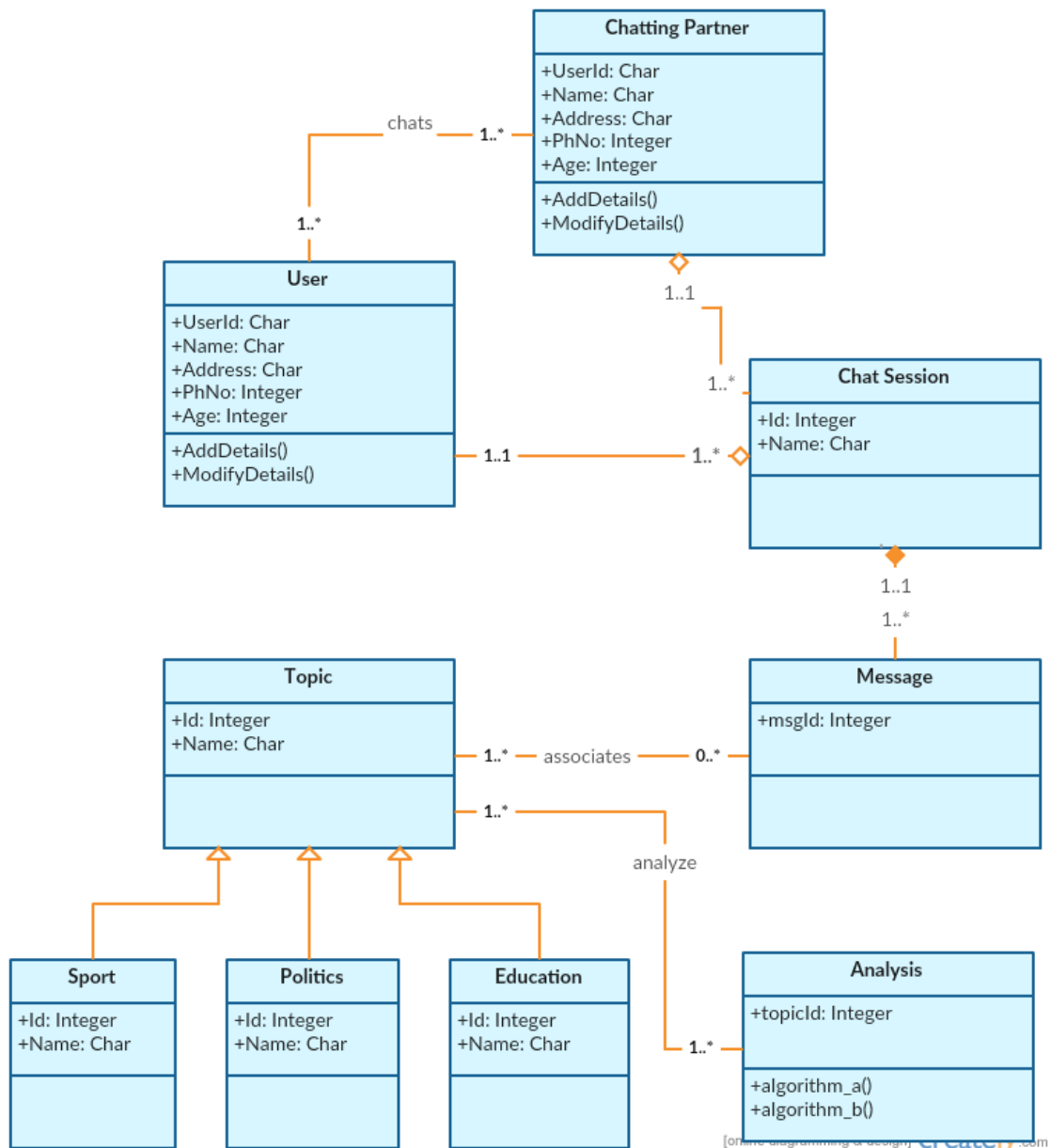
3.1.3 Software interfaces

This topic detection module highly depend on algorithms and it will generate set numeric values which needs to deal with graphically, for this purpose this module is will comprise of third party software to create graphical view inside the system if necessary.

3.1.4 Communications interfaces

The communication between the other modules of the system is important since they finally generate the numeric output. But in topic detection module does not use specific graphical interfaces to communicate with other modules in the system.

3.2 Classes/Objects



3.3 Performance requirements

The requirements in this section provide a detailed specification of the user interaction with the software and measurements placed on the system performance.

3.3.1 Prominent analytical data review

TITLE: Prominent analytical data review

DESC: The data displayed in the graphs should be user friendly and very easy to understand.

RAT: In order to understand chatting partner in analytical way.

DEP: none

3.3.2 Quick data update

TITLE: Quick data update

DESC: Data base should be updated with upcoming messages quickly without interrupting other functionalities running on the system.

RAT: In order to experience system without interruptions.

DEP: none

3.3.2 Quick result update

TITLE: Quick result update

DESC: Existing result should be visible to user as fast as possible along with message count increasing quickly without interrupting other functionalities running on the system.

RAT: In order to experience faster system to user.

DEP: none

3.4 Design constraints

This section includes the design constraints on the software caused by the hardware.

- During the design stages the major constraint that will be faced is the limitation of available time. The project is expected to be completed in 5 months. Then topic detection module is expected to be completed with minimum period of 3 months.
- And main software restriction that will cause to this topic module is DBMS used to manipulate messages inside the system. Since we will deal with large set of database its response time will be increased.

3.5 Software system attributes

The requirements in this section specify the required reliability, availability, security and maintainability of the software system.

3.5.1 Reliability

When consider any system; System reliability is the most important part of it. Because, the entire system process is depend on that.

In topic detection module all the generated analytical data will be stored in sequence manner then user will be capable of viewing it along with the message count. Also topic detection algorithms will be tested before it's used with training data for high reliability.

3.5.2 Availability

Topic detection plays major role in this system. Users always can interact with this module and has flexibility to read how topic detection work in a way of non-technical manner.

3.5.3 Security

- Since we deal with messages (Instant Messages) it's highly considerable thing to keep messages unreadable from other users then message are encrypted inside the database.
- Users cannot see others profile data.
- Unauthorized persons cannot access inside this system.
- User cannot see any algorithms used inside the **Topic Detection** module by viewing the source code of rendered HTML using Web browser's too (Developer option) .

3.5.4 Maintainability

Topic detection module comprises of three parts for purpose of maintainability as shown below,

- i) Extracting the messages from database and group the messages based on topics using clustering algorithms.
- ii) Find the distribution of the topics and generate analytical data using machine learning algorithm.
- iii) Visualize the analytical data.

Then it's easy to analyze entire module in set by step in order to provide more accurate output to the user and customizable for system developers.

3.6 Other requirements

User friendliness – for web based system user friendliness is important. If it is really easy to navigate through the web application; those web applications can have more user attractiveness.

4. SUPPORTING INFORMATION

4.1 Appendices

4.1.1 Appendix I: Objective tree of the system

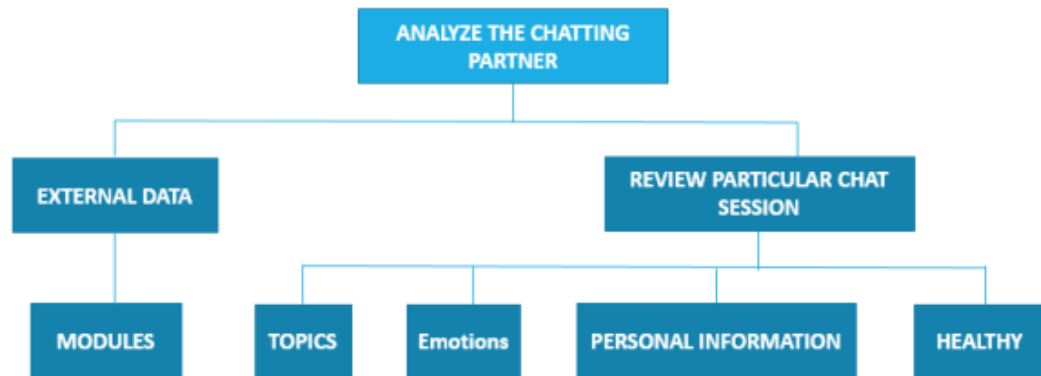


Figure 4 – Objective tree

4.1.2 Appendix II: System Overview Diagram

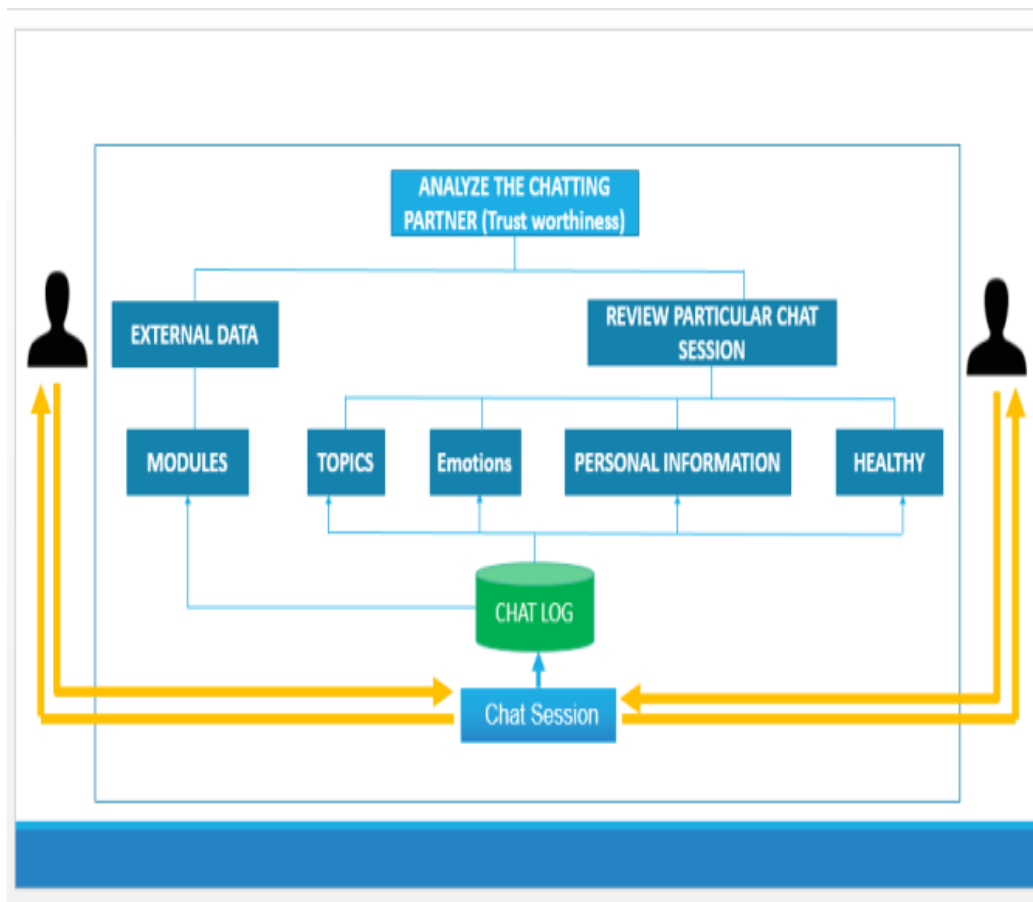


Figure 5 – System Overview Diagram