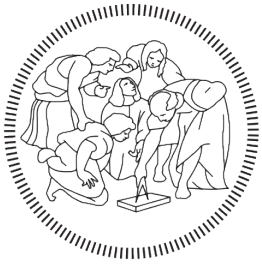
Politecnico di Milano
Scuola di Ingegneria Industriale e dell'Informazione
Corso di Laurea Magistrale in Ingegneria Informatica
Dipartimento di Elettronica, Informazione e Bioingegneria



POLITECNICO
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Academic Year 2015–2016

Some nice inspirational and aspirational quote. Some nice inspirational and aspirational quote.

Someone

Summary

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Abstract

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Chapter 1

Introduction

Some text [1] Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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1.1 Structure

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- In the chapter 2 blahblah
- In the chapter 3 Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Chapter 2

State of the art

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2.1 Dummy section

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Chapter 3

Sentiment analysis workflow

This chapter describes the workflow used to analyze the sentiment of social media comments and their corresponding posts. In order to outline the workflow, a top down approach was taken where each subsequent section provides an ever more detailed insight into a particular step of the workflow. The big picture is shown in Figure 3.1 and consists of four parts:

1. Obtaining data
2. Sentiment prediction using an API
3. Determining real sentiment of data
4. Evaluation of that API's performance

First part is the simplest one and as such doesn't merit a more detailed recounting other than mentioning that we were provided with a small sample dataset which, most relevantly, contained about 6000 comments.

In the sections that follow, each of the three remaining parts are broken down into conceptual steps describing the methodology used whilst not cluttering it with too many implementation details. Additionally, it is interesting to note that the first and third steps are done only once. This means that, for each new API we want to use, the workflow for sentiment analysis effectively consists of only steps 2 and 4, namely sentiment prediction and performance evaluation.

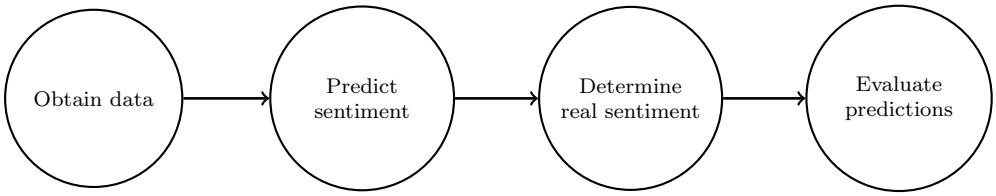

Figure 3.1: Sentiment analysis workflow

3.1 Sentiment prediction workflow

Let's assume we have access to an API for sentiment prediction. And by having access we mean being able to programmatically call the API with a text payload and have it return a prediction in some data format. The end goal is to analyze sentiment of all the comments in our sample dataset and aggregate the obtained data on a per post basis in order to infer whether it is was positively or negatively received, or even if it had no emotional impact whatsoever. And we want this to be done automatically, practically with a push of a proverbial button. By automatizing the process, it is easy to see how it can derive value for possible future ventures that extend far beyond our modest 6000 comment database.

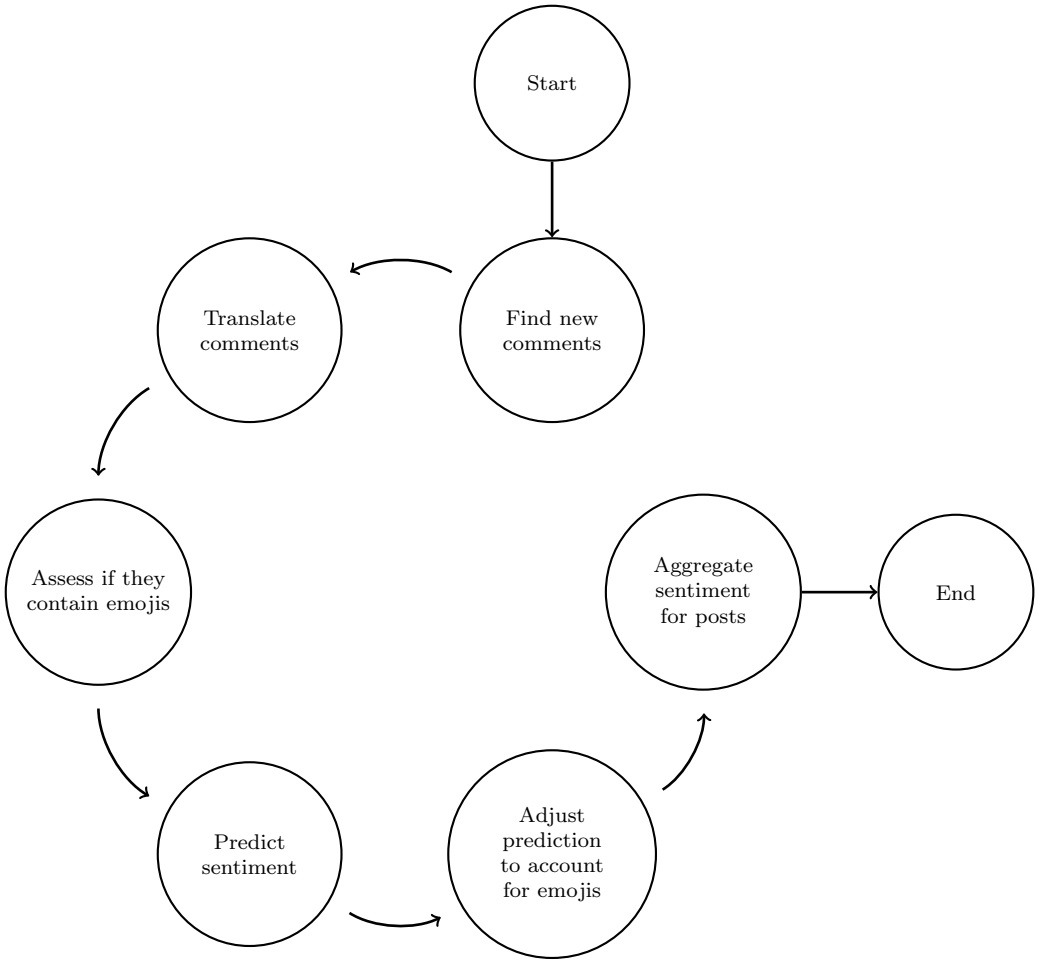

Figure 3.2: Sentiment prediction workflow

Figure 3.2 shows the main concepts that build up the workflow of our sentiment analysis. Since the term *workflow* can be a bit ambiguous, let us clarify exactly what we mean by it. In our case it is simply a python script named named *au-*

tomated_sentiment_analysis.py that can be run manually, or scheduled to run on a server at desired times/intervals. Sections that follow will explain each step in more detail and will also provide motivation for some, perhaps not so obvious, choices.

Find new comments

This part quite straight forward Once run, the script scans the database looking for comments that don't have a sentiment record and inserts one.

for the sake of completeness The inserted rows' sentiment columns default to a json shown in Listing 3.1. The reason for this particular choice of json and for using the json format in the first place is discussed at length in Section 4.1.

```
{
  "sentiment_label": "",
  "sentiment_stats": {
      "positive": 0,
      "negative": 0
      "neutral" : 0
  }
}
```

Listing 3.1: Default sentiment json

Translate comments

Translate comments, Mark comments containing emojis, Predict sentiment, Account for emojis, Calculate aggregate sentiment for posts by new we mean unanalyzed

...

3.2 Determining real sentiment workflow

How do we know our predictions are any good? real sentiment input can be done either by hand orby the REST API GUI or the REST API curl calls

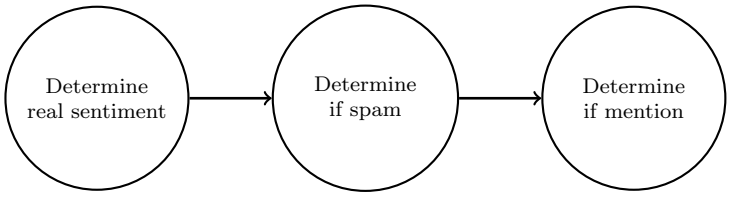

Figure 3.3: Determine real sentiment workflow

3.3 Evaluation workflow

performance evaluation of that particular API. how to evaluate? human input!

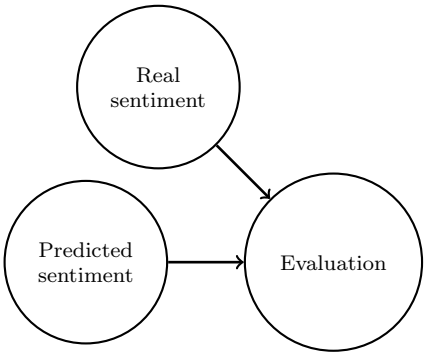

Figure 3.4: Sentiment evaluation workflow

Chapter 4

Framework

4.1 Design

Why json when it violated the 1NN rule? already in mysql, will eventually support json, and easily movable to nosql db, or even elastic search.

4.2 Implementation

4.3 User interface

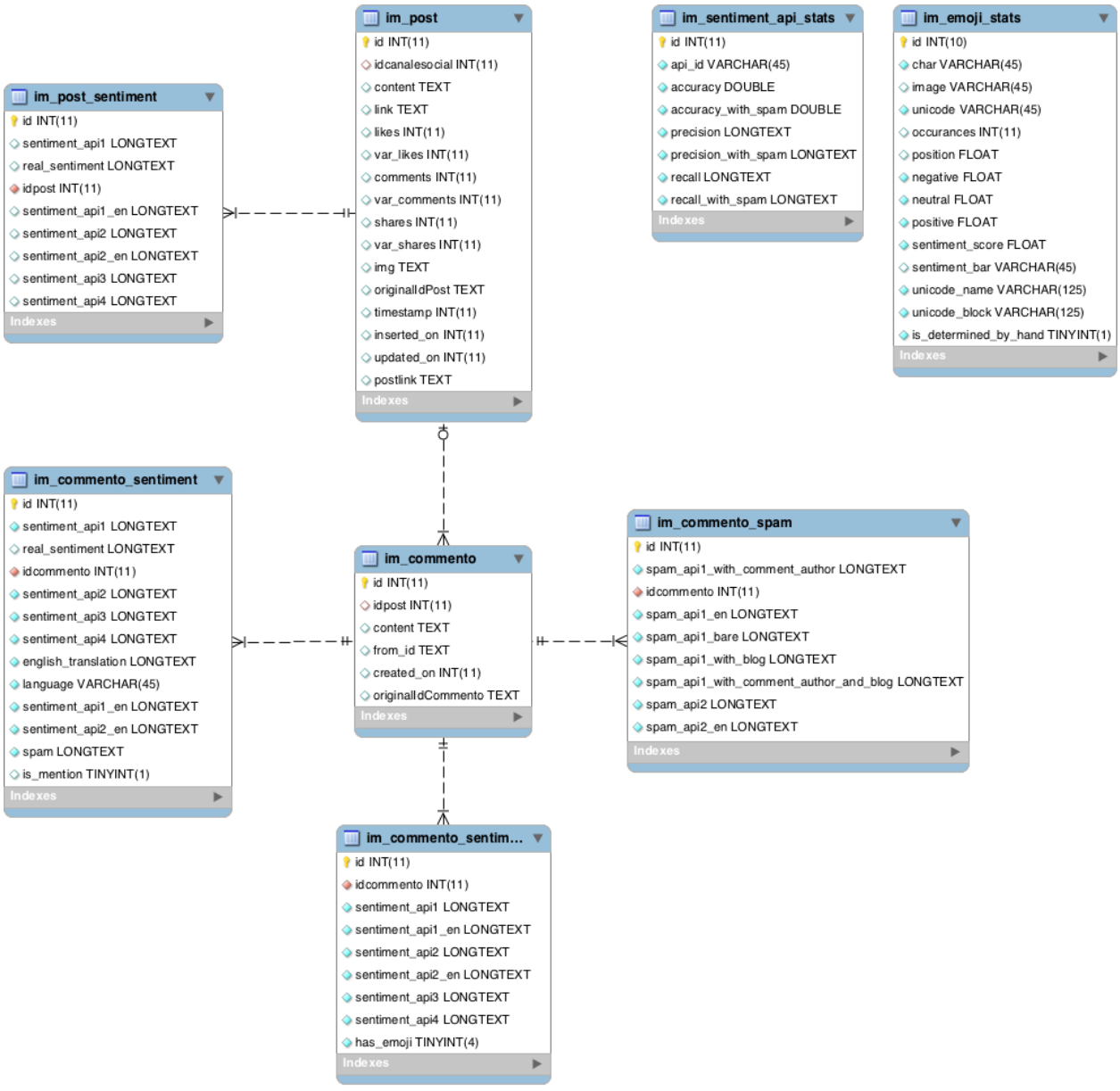

Figure 4.1: TTest caption

Chapter 5

Results

Chapter 6

Conclusion

Chapter 7

Future work

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[3] M. Odell and R. Russell, "The soundex coding system," *US Patents*, vol. 1261167, 1918.