UNIVERSITÀ
DI TRENTO

Dipartimento di Ingegneria e Scienza dell'Informazione

Corso di Laurea in
Informatica

Elaborato finale

Titolo

Sottotitolo (alcune volte lungo - opzionale)

Supervisore
.....

Laureando
Gandelli Alessio

Anno accademico .../...

Ringraziamenti

...thanks to...

Contents

Sommario

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Sommario è un breve riassunto del lavoro svolto dove si descrive l'obiettivo, l'oggetto della tesi, le metodologie e le tecniche usate, i dati elaborati e la spiegazione delle conclusioni alle quali siete arrivati.

Il sommario dell'elaborato consiste al massimo di 3 pagine e deve contenere le seguenti informazioni:

- contesto e motivazioni
- breve riassunto del problema affrontato
- tecniche utilizzate e/o sviluppate
- risultati raggiunti, sottolineando il contributo personale del laureando/a

Chapter 1

Introduction

Wikipedia (WP) is the biggest source of information currently available on the internet, there are more than 6 million articles and they are all maintained by volunteers. The value of Wikipedia is all in the hands of the editors.

Many articles means many users and therefore many potential conflicts. Avoiding these conflicts is the best way for this encyclopedia to grow.
Each Wikipedia page has four different sections:

- Article: the actual content of the page.
- Talk Page: a forum where people can talk about edits.
- History: a place where everyone can see the older versions of the pages.
- Source: in this section users can edit the page.

Conflicts could happen both on the Talk page, through a discussion, and in the Article, through an edit war. It is valuable to analyze all of these aspects to get a well-rounded view of the problem.

1.1 Main Project

The project our team is working on, in collaboration with Eurecat and the Wikimedia Foundation, is named: "Community Health Metrics: Understanding Editor Drop-off". this is an excerpt of the project idea:

"The primary value of Wikipedia is the editors. When an editor leaves the project, we lose their participation and contribution to the community, This could be related to multiple factors, also external to the project, but it could signal an issue related to internal dynamics and to the health of the community. While a big effort was dedicated to retain new editors, we lack knowledge and initiatives focused on understanding and preventing drop-off for experienced editors."
As stated in the project description, the focus is on expert users, who are the core of Wikipedia: there are 41,741,926 Wikipedia accounts but active users are only 132,916, namely
3% of all users.

Figure 1.1: page structure

Focusing on this category of users and understanding the reasons that lead to a drop-off can give a big help to WP. Several people are working on this project, this work is just a part of the whole. In the team, everyone is working on a specific topic with the idea of then merging the different results to obtain an analysis of the phenomenon from different points of view in order to have a greater understanding of the life cycle of users.

The prevention of the drop-off is not the only goal of the project, improving the community health is also important to let users be in a good environment without being held back from editing.

1.2 My Contribution

The topic explored in this study is the revert analysis - i.e., when the version of a page is restored to that of a specific date - for all the articles of Wikipedia.

This project consisted of the analysis of the edit history of different language editions of Wikipedia to study patterns of reverts and edit wars to understand their potential effect on individual user activity.

We implemented state-of-the-art metrics of controversy based on reverts and mutual reverts and developed a new metric based on revert chains. Metrics have been computed per page and per user monthly.

The results can be viewed in an interactive dashboard available online.

1.3 Related Work

There are several works involving reverts: An interesting tool that allows visualizing conflicts is the one developed by Suh *et al.* [2]. The problem is that it is from 2007 but WP started to grow around 2010; now we have new technologies and much more data to analyze so more interesting conclusions can be reached. There have been analyses of antisocial behavior caused by vandalism [1], but since the focus of the project is on experienced users, this is not relevant to this study.

Chapter 2

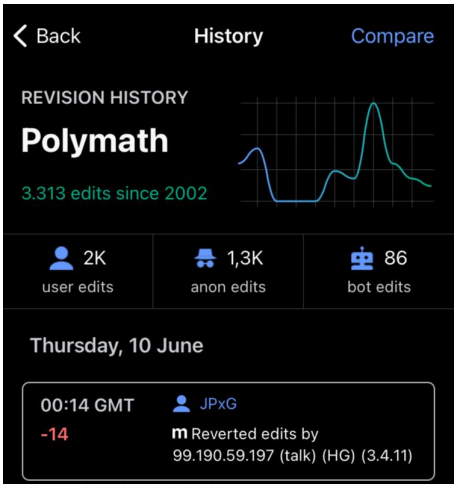
Background

Everyone knows what is WP and how to use it in a basic way but there lots of functionality there a lot of people ignore, starting from the fact that everyone can edit a page and all the versions are publicly available. Anyone with a browser can see and compare all the edits in a wikipedia page, but for developers there exist much powerful resources such as big Datasets containing a lot more informations.

2.1 History Exploration

There are several tools anyone can use to explore revision history:

- Mobile application: this resource is only avaiable in the mobile application and gives some statistics about the edits of the page like the numbers of anonymous editors and a
- History page: it is possibile to compare two edits with an interactive tool which show the trend of the pages edit : for each edit matches a bar indicating the number of bytes added or removed by the revision



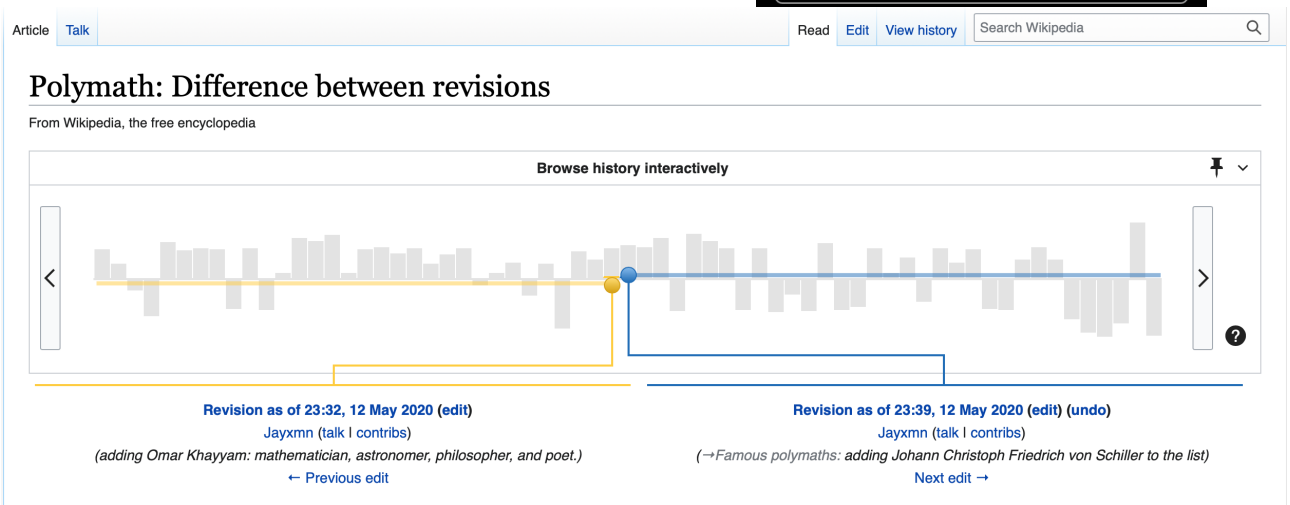


Figure 2.2: interactive visualization of the history

2.2 Dataset

There are two datasets that store info about WP edits made available from the WikiMedia Foundation

- MediaWiki History
- MediaWiki History Dumps

The only difference beyond the format (XML the first one TSV the second) is that the first one also contains the content of the page. The dataset used in this study is the MediaWiki History Dumps.

2.2.1 MediaWiki History Dumps

The dataset used contains information about all events that has happened in WP since 2001. There are 3 types of events:

- page: when a page is created, moved, restored, merged ,deleted
- user: when a user is created, renamed, blocked, changed the rights
- revision: when a page is edited

In this analysis the only revision events are interesting, there are 68 fields divided in different sections: the first one with general info of the revision like timestamp and comment, a section with info about the user who made the revision, one for the page involved, and the last one with more specific information about the revision

id	text	groups	is_anonymous	registration	revision_count
42081	Checco	autopatrolled	False	2006-02-10 14:52:44.0	10479

Table 2.1: data about user that made the revision

id	title	namespace	revision_count
116530	Pino_Rauti	0	195

Table 2.2: data about the page where the revision is made

id	parent_id	is_reverted	reverter_id	is_reverter
73507165	73506955	True	73511400	False

Table 2.3: data about the revision

2.3 Definitions

It is useful to define some terms that will be used different times

definition 1 *(Revert) On Wikipedia, reverting means undoing or otherwise negating the effects of one or more edits, which results in the page (or a part of it) being restored to a previous version.*

definition 2 *(Revert chain) On a Wikipedia page, a revert chain happens when an edit which reverts an edit is in turn reverted.*

definition 3 *(Mutual revert) A "mutual revert" is recognized if a pair of editors (x, y) is observed once with x and once with y as the reverter [**?**].*

definition 4 *(Editor weight) The weight of an editor x is defined as the number of edits N performed by him or her.*

definition 5 *(Mutual revert weight) The weight of a mutually reverting pair MW is defined as the minimum of the weights of the two editors.*

definition 6 *(Chain weight) The weight of a revert chain CW is defined as the minimum of the weights of the editors involved in the chain.*

2.4 Metrics

Two complex controversiality metrics have been computed in this study: the first one,M, is the state of the art metric introduced by Yasseri *et al.* which give us a score of the controversiality of the page based on mutual reverts. The second one that we designed, called G, is very similar to M, but instead of using mutual reverts it uses revert chains to evaluate the controversy of the page

2.4.1 M

The controversiality M of an article is defined by summing the weights of all mutually reverting editor pairs, excluding the topmost pair, and multiplying this number by the total number of editors E involved in the article.

$$M = E \sum_{all\ mutual\ reverts} MW \tag{2.1}$$

2.4.2 G

The controversiality G of an article or user is defined by summing the weights off all the chains there are in a page or a user is involved, and multiplying by the total number of editors N involved in at least one chain.

$$G = N \sum_{all\ revert\ chains} CW \tag{2.2}$$

Chapter 3

Methods

3.1 Dataset

The dataset used is the wikimedia history dumps which is a large dataset derived from - TSV - each line is an event - event types: revision page user

i'm interested in revision event

here you the schema overview

more detailed info there

3.2 Approach

Considering the huge dimension of the dataset and the fact that a large portion of its content was useless, smaller datasets have been computed with the aim of expediting the analysis even for future usages.

the first skimming was to filter the rows, after this only the revisions which made o received a revert is keeped. than i ordered it by page, this sataset which is 10 % of the original one is the one i used to computeal the now dataset...

while this is just the biggest one without some rows, the structure of computed one is different. there are 2 modules

- Chains
- Group

image slide 5

Chapter 4

Results and Discussion

Chapter 5

Infrastacture

Chapter 6

Conclusions

Bibliography

[1] Johannes Kiesel, Martin Potthast, Matthias Hagen, and Benno Stein. Spatio-temporal analysis of reverted wikipedia edits. In *ICWSM*, 2017.

[2] Bongwon Suh, Ed H. Chi, Bryan A. Pendleton, and Aniket Kittur. Us vs. them: Understanding social dynamics in wikipedia with revert graph visualizations. In *2007 IEEE Symposium on Visual Analytics Science and Technology*, pages 163–170, 2007.

Allegato A Titolo primo allegato

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