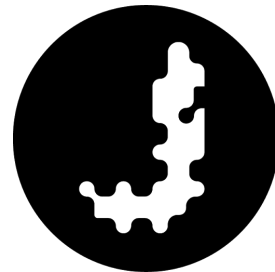
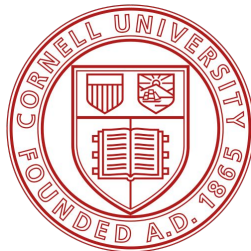


WikiConv

A Corpus of the Complete Conversational History of a
Large Online Collaborative Community

Yiqing Hua Cristian Danescu-Niculescu-Mizil Dario Taraborelli
Nithum Thain Jeffery Sorensen Lucas Dixon



Conversations on Wikipedia



The screenshot shows the Wikipedia article for Brussels. At the top, there's a navigation bar with links like 'Not logged in', 'Talk', 'Contributions', 'Create account', and 'Log in'. Below this is a search bar and a table of contents. The main text of the article starts with 'From Wikipedia, the free encyclopedia' and 'Coordinates: 50°51'N 4°21'E'. The article text describes Brussels as the capital of Belgium and the Brussels-Capital Region. To the right of the text is a table with information about Brussels, including its name in different languages and its status as the capital region. Below the table is a gallery of images, with the first image of the Brussels skyline highlighted by a red box. The left sidebar contains various links like 'Main page', 'Contents', 'Featured content', 'Current events', 'Random article', 'Donate to Wikipedia', 'Wikipedia store', 'Interaction', 'Help', 'About Wikipedia', 'Community portal', 'Recent changes', 'Contact page', 'Tools', 'What links here', 'Related changes', 'Upload file', 'Special pages', and 'Permanent link'.






<http://www.boerenopeenkruispunt.be/Tips/tabid/105/ArticleID/245/Default.aspx>

Can I add this image to the page?

Conversations on Wikipedia

Editing Talk:Brussels

This is a **talk page**. Please respect the [talk page guidelines](#), and remember to [sign your posts](#) by typing four tildes (~~~~).

B *I*    

► [Advanced](#) ► [Special characters](#) ► [Help](#) ► [Cite](#)

== Image ==

I made this image last May and I want to add it to the page.

:This image fits the other page more.

::All right.



<http://www.boerenopeenkruispunt.be/Tips/tabid/105/ArticleID/245/Default.aspx>

Can I add this image to the page?

Talk pages are technically the same as **article pages** on Wikipedia.

Research interest on Wikipedia talk pages



Antisocial Behavior

[Wulczyn et al. 2017]
[Zhang et al. 2018]



Disputes

[Wang and Cardie 2014a]
[Wang and Cardie 2014b]
[Kittur et al. 2007]



Conversational Behaviors

[Danescu-Niculescu-Mizil 2012]
[Bender et al. 2011]
[Kittur et al. 2008]
[Halfaker et al. 2009]

Conversation Snapshot Vs. History

Revision 1

== Image ==

I made this image last May and I want to add it to the page.

:This image is stupid and so are you.

:This image fits the other page more.

::All right.

Revision 2

== Image ==

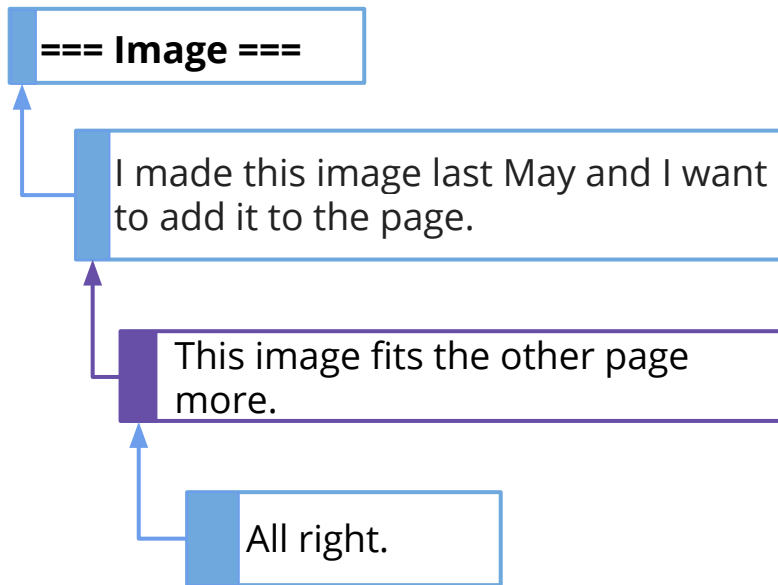
I made this image last May and I want to add it to the page.

:This image fits the other page more.

::All right.

Prior Work

Reconstructing data from **snapshots**.



Conversation Snapshot Vs. History

Revision 1

== Image ==

I made this image last May and I want to add it to the page.

:This image is stupid and so are you.

:This image fits the other page more.

::All right.

Prior Work

Reconstructing data from **snapshots**.

- **Evolution** of conversations is missed.
- Does not scale.

Revision 2

== Image ==

I made this image last May and I want to add it to the page.

:This image fits the other page more.

::All right.

WikiConv: History of User Interactions

Revision 1
== Image ==
I made this image last May and I want to add it to the page.
:This image is stupid and so are you.
:This image fits the other page more.
::All right.

Revision 2
== Image ==
I made this image last May and I want to add it to the page.
:This image fits the other page more.
::All right.

WikiConv

Addition	=== Image ===	
Addition	I made this image ...	
Addition	This image fits the other ...	
Addition	All right.	
Addition	This image is stupid ...	
Deletion	This image is stupid ...	

- + Captures **evolution** of conversations.
- + **Scalable** to entire Wikipedia.
- + Works for ***multiple*** languages.

Reconstruction Challenges

Revision 1

`== Image ==`

`I made this image last May and I want to add
it to the page.`

`:This image is stupid and so are you.`

`:This image fits the other page more.`

`::All right.`

Revision 2

`== Image ==`

`I made this image last May and I want to add
it to the page.`

`:This image fits the other page more.`

`::All right.`

Parsing ambiguity.

What's the boundary of each comment?

Reconstruction Challenges

Revision 1

`== Image ==`

`I made this image last May and I want to add it to the page.`

`:This image is stupid and so are you.`

`:This image fits the other page more.`

`::All right.`

Revision 2

`== Image ==`

`I made this image last May and I want to add it to the page.`

`:This image fits the other page more.`

`::All right.`

Parsing ambiguity.

Action ambiguity.

Is this action a deletion or a modification of another comment?

Reconstruction Challenges

Revision 1

`== Image ==`

`I made this image last May and I want to add it to the page.`

`:This image is stupid and so are you.`

`:This image fits the other page more.`

`::All right.`

Revision 2

`== Image ==`

`I made this image last May and I want to add it to the page.`

`:This image fits the other page more.`

`::All right.`

Parsing ambiguity.

Action ambiguity.

Scale of Wikipedia.

Wikipedia data dump with all edit history is
> 10TB (English alone).

Reconstruction Challenges

Revision 1

`== Image ==`

`I made this image last May and I want to add it to the page.`

`:This image is stupid and so are you.`

`:This image fits the other page more.`

`::All right.`

Revision 2

`== Image ==`

`I made this image last May and I want to add it to the page.`

`:This image fits the other page more.`

`::All right.`

Parsing ambiguity, carefully designed heuristics (detail in paper and codebase)

Action ambiguity, better defined conversational actions that captures the interaction nature,

Scale of Wikipedia, distributed computing pipeline on Google Dataflow.

Conversational Actions

Conversational Actions

- **Creation:**
 - the start of a conversation thread based on a markup section heading being added.
- **Addition:**
 - the addition of a new comment to a thread.
- **Modification:**
 - modification of an existing comment.
- **Deletion:**
 - the removal of a comment or heading.
- **Restoration:**
 - a revert specifies the deleted action being undone.

== Improving the Article ==

Conversational Actions

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== Improving the Article ==

Let's discuss how to write this article!

Conversational Actions

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== Improving the Article ==

Let's discuss how to improve this article!

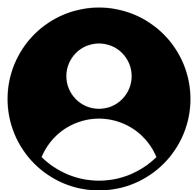
Conversational Actions

- Creation:
 - the start of a conversation thread based on a markup section heading being added.
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 - the addition of a new comment to a thread.
- **Modification:**
 - **modification of an existing comment.**
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 - **the removal of a comment or heading.**
- **Restoration:**
 - **a revert specifies the deleted action being undone.**

== Improving the Article ==

Let's discuss how to improve this article!

Resulted Dataset Statistics



4.3M Users



24M Talk Pages

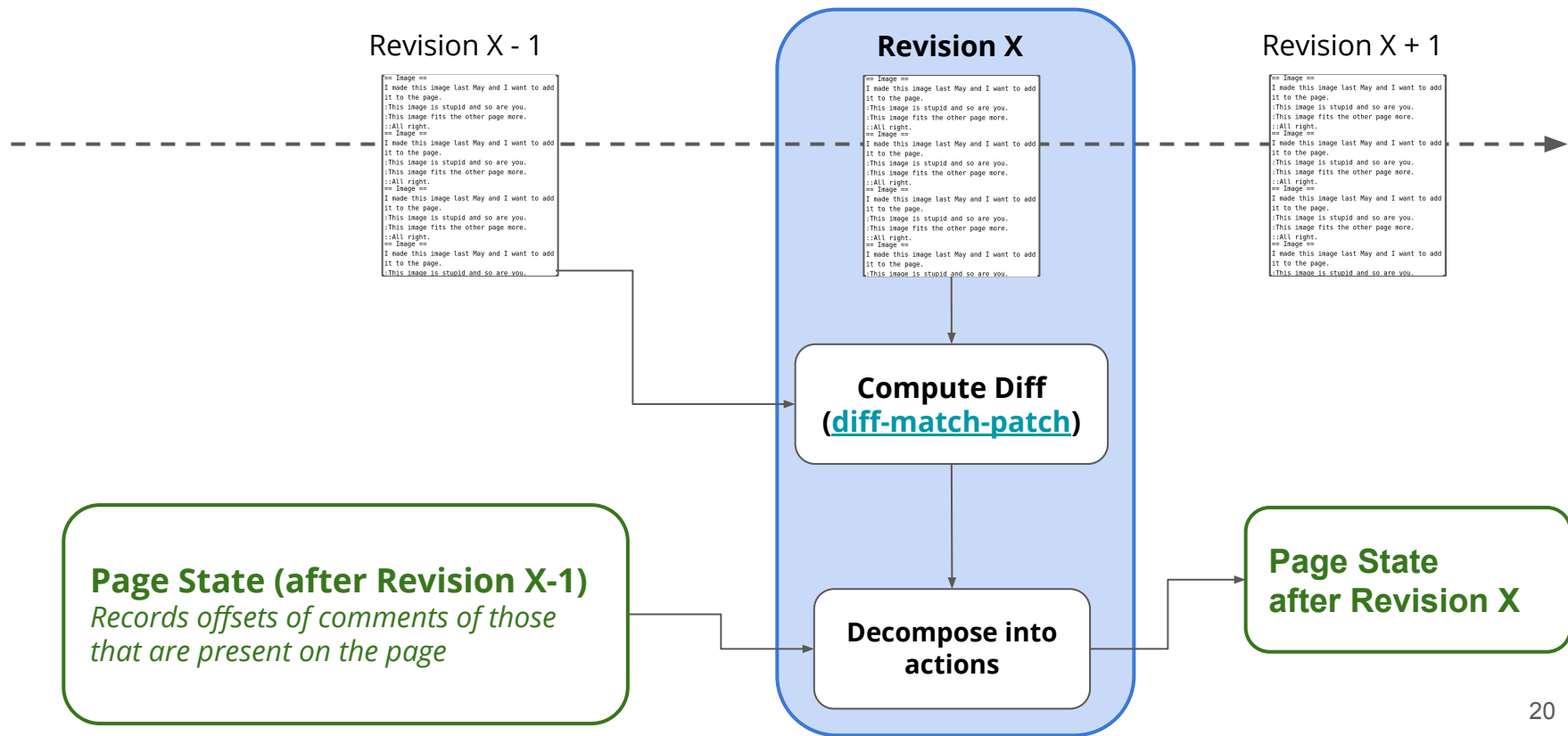
120M Revisions

Addition	=== Image ===	
Addition	I made this image ...	
Addition	This image fits the other ...	
Addition	All right.	
Addition	This image is stupid ...	
Deletion	This image is stupid ...	

91M Conversations

241M Actions

Reconstruction Pipeline



Evaluation Result -- WikiConv



Action Type Breakdown		<i>Comment Boundary (%)</i>	<i>Action Type (%)</i>
Creation	21%	100	100
Addition	39%	96	100
Modification	13%	97	95
Deletion	24%	94	96
Restoration	3%	84	98
All actions:		96	98

Manually evaluated accuracy on 100 randomly sampled actions from each category.

Evaluation Result -- WikiConv



WIKIPEDIA
The Free Encyclopedia

Action Type Breakdown		Comment Boundary (%)	Action Type (%)
Creation	21%	100	100
Addition	39%	96	100
Modification	13%	97	95
Deletion	24%	94	96
Restoration	3%	84	98
All actions:		96	98



維基百科
自由的百科全書

Action Type Breakdown		Comment Boundary (%)	Action Type(%)
Creation	22%	100	100
Addition	50%	96	100
Modification	9%	84	94
Deletion	16%	99	90
Restoration	3%	97	98
All actions:		96	98

Research on WikiConv

Moderation of Toxic Behavior

Toxic Behavior:

Comments in the discussion that might discourage others to participate in the conversation.

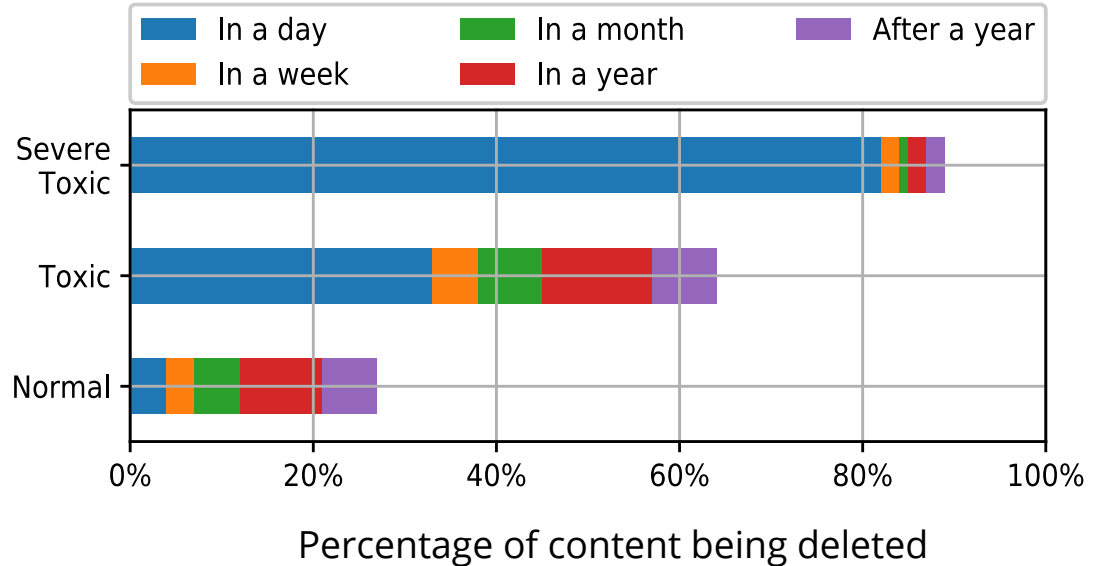
Tool:

Perspective API, a CNN-based API service that scores toxicity of a comment and was trained on Wikipedia data.

Moderation of Toxic Behavior

Addition and creation contents are labeled by **Perspective API** in terms of severe toxic, toxic and non-toxic.

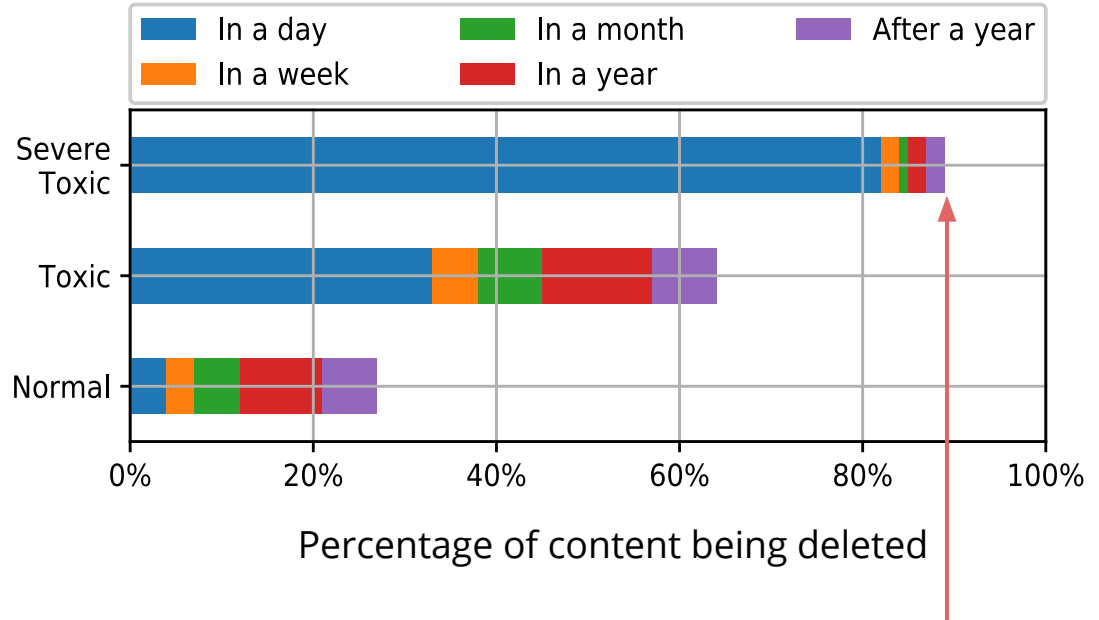
We measure the speed of deletion of these contents.



Moderation of Toxic Behavior

Addition and creation contents are labeled by **Perspective API** in terms of severe toxic, toxic and non-toxic.

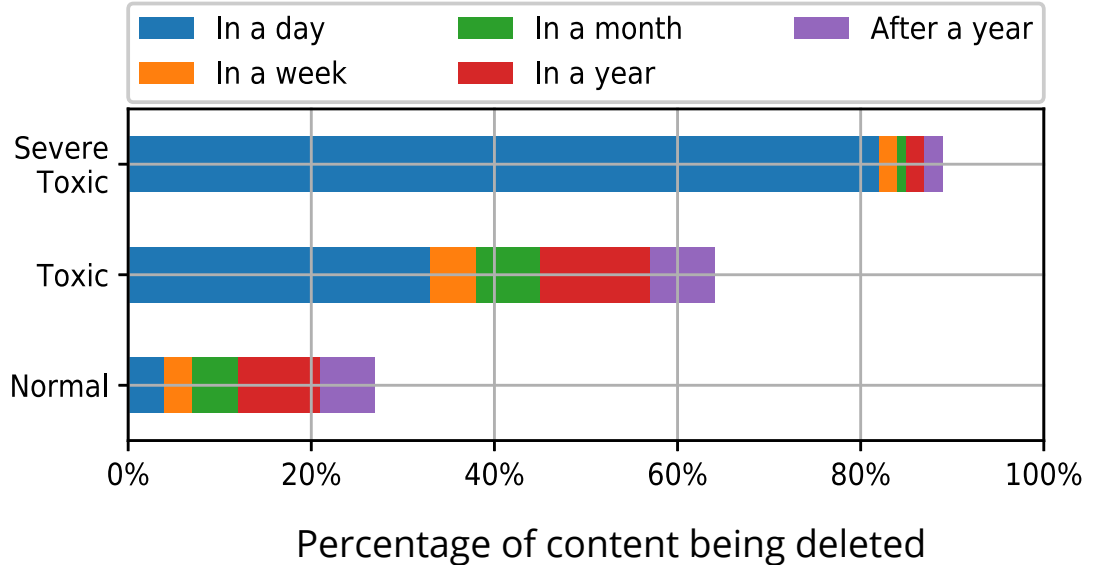
We measure the speed of deletion of these contents.



89% of the severe toxic contents are removed from Wikipedia.

Moderation of Toxic Behavior

82% of the severe toxic contents and
33% of the toxic contents are deleted
within a day.



User interactions being captured in our dataset:
Toxic behaviors are deleted **quickly.**

WikiConv

Wikipedia Talk Page reconstruction pipeline



WIKIPEDIA
The Free Encyclopedia

Complete

Captures the
evolution of the
conversations.

Multiple Languages

English
Chinese
German
Russian
Greek

Large Scale

4.3M Users
24M Talk Pages
120M Revisions
91M Conversations
241M Conversational Actions
(statistics of English dataset)

WikiConv Codebase:

<https://github.com/conversationai/wikidetox/tree/master/wikiconv>

Dataset:

<https://console.cloud.google.com/storage/browser/wikidetox-wikiconv-public-dataset>