

1. Introduction (3-5 sentences)

In this project, I am going to attempt to explore the human edit behavior on Wikipedia pages. Wikipedia is one of the world's biggest information sources, disseminating information on virtually every topic in the world. However, there are a small number of vandal users who carry out acts of vandalism on Wikipedia community. Digging in the information of Wikipedia data will help people to understand the human edit behavior on Wikipedia pages and detect vandals in advance.

2. Related Work (10-30 sentences)

There has been some works on detecting vandalized pages in Wikipedia. The tools are using to detecting vandalism on Wikipedia are ClueBot NG and STiki. ClueBot [1] NG uses an artificial neural network to score edits and reverts the worst-scoring edits which is considered as the state-of-the-art bot being used in Wikipedia to fight vandalism. STiki [2] is another tool to help users to revert vandalism edits using edit metadata, user reputation score and textual features. It also leverages the spatio-temporal properties of edit metadata to assign scores to each edit. Another research [3] use feature from linguistic features and machine learning on a set of 32K edits annotated by humans on Amazon Mechanical Turk. Kumar et al. [4] develop a system, VEWS which based on edit-pairs and edit patterns to study the behavior of vandals on Wikipedia. The behavior of vandals can be identified with those behaviors from benign users. The results show that the combination of linguistic (from ClueBot NG and STiki) and non-linguistic features (from VEWS algorithm) has the best classification performance.

3. Project Topic and Proposed Solution (10-30 sentences)

I am going to explore the human edit behavior on Wikipedia pages. The data science analytic and machine learning techniques will be used in this study. UMDWikipedia data set will be used in this project. The data set consists of all 17,027 vandal users that registered and were blocked by Wikipedia administrators for vandalism between January 01, 2013 and July 31, 2014. There are also a randomly selected of 16,549 benign users who registered between January 01, 2013 and July 31, 2014 in the data set. One interesting thing I would like to explore is that which pages have the most edited times in vandal users and which pages have the most edited times in benign users. This potential information behind data will reveal the taste of users when they are looking for pages to edit. In the data set, one feature of vandal and benign users is "whether page is reverted". As our common knowledge, only vandal edit pages should be reverted. Having a glance at the benign data, there are also some pages reverted. I will find out whether these reverted benign pages have relationship with vandal pages. To get a direct and clear feel for the data, I will use

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different visualization methods by python, like word cloud, heatmap and correlation plot to measure performance.

The final result will be showed the different edit behavior of vandal and benign users on Wikipedia pages by different plots and statistic tables. The expecting results will also show benign or vandal users prefer to edit which page categories. From the statistic results of page categories edited by vandal and benign users, whether I can find different or common edit behavior on these two kinds of users?

4. Project Timeline (fill in this table, no additional text required)

Provide a timeline of how you plan to accomplish your goals. The due dates for project progress report and final reports should provide guidance for organizing your work.

	Date	Milestone achieved
1	Feb 15	Collect data, preprocess data
2	Feb 22	Finish exploring the pages have the most edited times in vandal and benign users and find out whether the common of those pages could reflect the page edit behavior of users
3	March 2 nd	Finish 50% of project
4	March 15	Finish exploring whether these reverted benign pages have relationship with vandal pages
5	March 25	Build distance matrix of users and pages, using different dimensionality reduction approaches, like MDS, SVD or t-SNE to reduce data dimension and get the projection.
6	April 10	Finish exploring the projection pattern of users and pages in subspace
7	May 3 rd	Finish project and final report

5. Team Roles and Contributions (fill in the table, no additional text required)

Define clear roles and contributions for each member of the team (if applicable). Grade distribution is up to the discretion of the instructor, so try to make these as clearly defined as possible.

	Team Member Name (801033175)	Responsible For
1	Zhihui Liu	Explore data, write report

6. References (provide any background references)

[1] http://en.wikipedia.org/wiki/User:ClueBot_NG.

[2] <http://en.wikipedia.org/wiki/Wikipedia:STiki>.

[3] S.M. Mola-Velasco, "Wikipedia vandalism detection through machine learning: Feature review and new proposals - lab report for pan at clef 2010." in *CLEF*, 2010.

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[4] Kumar S, Spezzano F, Subrahmanian VS. Vews: A wikipedia vandal early warning system. In Proceedings of the 21th ACM SIGKDD international conference on knowledge discovery and data mining 2015 Aug 10 (pp. 607-616). ACM.