

Enhancing Social Media Governance with Policing Bots - Milestone 3 Evaluation

Authors:

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Client:

- Dr. Khaled Slhoub - kslhoub@fit.edu

Progress of current milestone (Task Matrix):

Task	Completion	Cody	Gabriel	Liam	To Do
Improve data collection system	80%	25%	25%	50%	Improve our database and data collection systems, more info displayed is the goal.
Research and decide on a single starting bot detection method	90%	50%	25%	25%	This is something that could easily change, but we are feeling good about our chosen method.
Start implementation of chosen bot detection method	100%	33%	33%	33%	
Create a working demo of rote	80%	25%	50%	25%	The demo could be improved, hoping to

bot detection (with the data collection integration)					make more functionality for the next one.
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Discussion for each accomplished task for the milestone:

- Task 1: For this section, we were hoping to take the code we already had and work on implementing a better way to organize the data. Like we said in our previous milestones, we wanted to implement a database for easier indexing and organization. We are hoping to constantly improve this part. There are a few issues, we aren't entirely sure of what does and does not need to be indexed, so we are temporarily grabbing basically all of it. This doesn't really affect anything but readability though.
- Task 2: There are quite a few different types of bot detection available. We read a lot of the papers and documentation given to us by Dr. Shloub. The text frequency analysis ended up being the type that seemed most prudent for the project. This essentially reads through multiple posts by a suspected bot and compares everything that they type. We are using the Spacy library, which is a text processing library dedicated to analyzing text. If a user is posting material that is too similar to everything else they post, in a certain (very short) time frame, we can make some assumptions about whether or not the user is a human. The only issue that seems to arise with this is that most papers agree that a single avenue of detection is not enough to be completely accurate. Most researchers seem to think that multiple detection algorithms are basically a requirement if you want to shoot for high accuracy, because no modern algorithm is perfect by itself yet. At the moment, we are focusing on understanding a single algorithm well enough that we can implement multiple detection algorithms working together for the final finished product (we are shooting for 85% accuracy at this point, for detecting bots on Reddit.)
- Task 3 and 4: We were hoping to manage to get our detection algorithm in a very rough prototype state. We managed to get some rote text analysis working, and it seems to play nicely with our already created data collection program. We also made good strides towards taking our csv data and turning it into a SQL based database. Basically, we use python to collect the data, then send the csv file to a MySQL query for formatting into a database. We have managed to make a very simple example of this in our demo, and think it will keep working well into the

future. There is still a lot of refining to be done, but we are making good strides, we think.

Discussion of contribution for the current milestone:

- Cody Manning: Cody spent a bunch of time reading through the research papers given to the team by the client. He ended up finding text frequency analysis and deciding to go with this for the project. He also contributed to the implementation of the detection method to the main framework, and spent some time trying to expand his knowledge of the various libraries needed for the project. He also wrote this document.
- Gabriel Silva: Gabriel focused on implementing the detection method that Cody found, he used our previous demo as a stepping stone for our detection algorithm. He also spent time learning about SQL for the future database, and teaching Liam and Cody about the libraries he has researched for the framework.
- Liam Dumbell: Liam spent a bunch of time working on a database system for data collection. He used his knowledge from his databases class to help collect the data we scrape into a database using python and MySQL. He helped catch Cody and Gabriel up in SQL knowledge and implementation. Liam also contributed to the demo and the implementation of the detection method Cody found.

Plan for the next milestone (Task Matrix):

Task	Cody	Gabriel	Liam
Continue work on our chosen detection method (find potential additions)	33%	33%	33%
Begin planning for the distinguishing method	33%	33%	33%
Create a demo of our updated work	33%	33%	33%

Discussion for each task of the next milestone:

- Task 1: Our current detection method seems like the best for the project. But something that is prevalent in all of our research is that bot detection works best when many detection algorithms are being used concurrently. It seems that there is no one perfect algorithm that works alone. So we are going to try to find additional algorithms that can be used in tandem with the detection method we have chosen. This is something that we will have to play around with, in order to save time, and remain within the scope of our project. We have a few detection methods in mind, but we are not sure how they will integrate with our current system, so we need to tread carefully to keep from breaking our already established algorithm (plus making sure that it actually adds something fruitful to the framework).
- Task 2: With the bot detection system in an almost functional state, we can begin planning for the second 'D' of our three 'Ds' system. The second 'D' is distinguishing between bots that we deem beneficial versus bots that we consider malicious. We haven't decided on a specific method for how we are going to distinguish the types of bots, so research will need to be done here. Another important note about this section is that we need to actually come to a consensus on what we consider beneficial, after all; what some people consider annoying others may find helpful. This will require a lot of discussion amongst us.
- Task 3: The detection method is still a work in progress, and we are hoping to have a demo of the improved detection method. We would also like to have an early version of the distinguish method working and integrated into the framework with the detection method. If we can not get them working in tandem (yet), we will probably end up making two separate demos, one for the improved detection method and one for the prototype 'distinguish' method. From here, we can dedicate the entirety of the second semester to improving the two (difficult) methods. The final D is deciding, and we think that one will be the easiest. It involves deciding what we do with the detected bots we find. We plan to meet over the winter break to try and get a head start on the second semester of the project.

Dates of meeting with Client:

- November 27th, 2023

Client Feedback on Milestone 3:

- See faculty feedback below

Dates of meeting with Faculty Advisor:

- November 27, 2023

Faculty Advisor Feedback on Milestone 3:

- Task Feedback: Our advisor was happy with our progress, and has put us in contact with a grad student to assist us in our research. He told us to ensure that we implement more than one detection method, in order to keep our accuracy high.

Faculty Advisor Signature _____ Date: _____

Evaluation by Faculty Advisor:

- Faculty Advisor: detach and return this page to Dr. Chan (HC 214) or email the scores to pkc@cs.fit.edu
- Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

Cody Manning	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Gabriel Silva	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Liam Dumbell	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Faculty Advisor Signature _____ Date: _____