Cs 445 Project Proposal

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Introduction: Social media platforms have become a very popular method of communication among people throughout the world as they allow a network of users to spread information at an unprecedented rate. In this proposal, we posit the idea of how fake users, known as “bots”, can be configured and controlled by agents with malicious intent to effectively spread information of the agent’s choice throughout the platform’s user space. Further, we aim to study this notion and simulate the useage, spread of information, and detection of malicious bots through a software simulation.

Goals: The main goal of this project will be to simulate a social media environment that will give insights into how a malicious agent may use the platform to spread any information that they wish with the use of ‘fake’ or automated accounts that can share, and like the content with real users of the platform. We wish to find how many (or few) of these ‘bots’ an agent would need to effectively spread the information that they wish. We also aim to find how the more content that they push with these accounts may generate more followers and therefore lead to an even larger spread of the information. We also hope that this may lead to ways of helping to detect people who may be attempting to use these platforms maliciously, by helping to illustrate some the ways in which they may operate.

Merit: We believe that there is great merit in the pursuit of this project, if we can provide any insight into how people may exploit these systems then we may be able to better detect them and help restrict their use of the platform. This would also help to ensure that these platforms are a more reliable source of information, which is especially important as these systems become ever more popular as places to disseminate news.

Methods: At this stage of the project the exact implementation methods are not yet decided. However we do plan to use some method of agent based simulation to represent users of the social media platform. We will need further study into ways in which we can model the spread of information across a social media platform, such as how many ‘bot’ retweets would someone need to start spreading the information to a substantial number of legitimate users, how the number of followers a person has affects the number of users who will share or retweet, if a user can exploit current

systems on these platforms such as ‘trending’ searches, etc. We expect that we will have to focus our project onto a single platform for the model we will build for the simulation to save time on implementation.

Conclusion: By using a simulation to study how a social media platform can be used maliciously to spread misinformation, we aim to detect malicious bots and prevent them from engaging in this behavior to keep the platform credible with more accurate information. In the future, a more generic, configurable simulation system may be designed to quickly represent and study how malicious bots can be thwarted on a wide variety of different social media platforms.