Behind the Chat: Agent-Based Modeling of Twitch Mod Bots vs. Spambots

Team Information

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GitHub Repository URL: https://github.com/Peterayade/EECS-4461-Project.git

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Section 1: Topic

Behind the Chat: Agent-Based Modeling of Twitch Mod Bots vs. Spambots

Phenomenon:

- Astroturfing

- Metric manipulation

- Bot vs bot battles

Description:

On live streaming platforms like Twitch, chat rooms are the main space for viewers to interact with streamers. But as live streaming becomes more popular, human and bot accounts that send spam or ads have begun to flood in.

Human accounts that send ads and spam messages try to "steal" the popularity of the current live-streaming room to achieve their own publicity purposes. Compared with bot accounts, malicious human accounts are fewer in number, but more intelligent and more difficult to be detected and managed by mod bots.

Bot accounts use automated scripts to send spam ads, post malicious links, and disrupt the chat experience. To deal with these interruptions, Twitch relies on mod bots to automatically detect and block spam. However, this is not just a simple "ban and move on" situation - it's an ongoing battle. Spam bots are

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constantly evolving to evade detection, and mod bots must constantly adapt to keep up.

One solution is ABM. ABM is a simulation method that treats spam bots and mod bots as intelligent agents, each following its own set of decision rules and interacting with each other. By simulating different strategies, we can observe how the battle between mod bots and spam bots unfolds. For example, spam bots may adjust their strategies to avoid detection by changing message formats, posting less frequently, or even mimicking human conversations. At the same time, admin bots must improve their algorithms to increase detection accuracy while minimizing false bans of real users.

Section 2: Relevant Works

- Calvaresi, D., Dubovitskaya, A., Taveter, K., Schumacher, M., & Främling, K. (2023). Exploring agent-based chatbots: A systematic literature review. *Journal of Ambient Intelligence and Humanized Computing, 14*(8), 11207–11226. https://doi.org/10.1007/s12652-023-04626-5

- Cai, J., & Wohn, D. Y. (2019). Categorizing live streaming moderation tools: An analysis of Twitch. ResearchGate. https://www.researchgate.net/publication/335806321_Catego

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