GLOBAL INNOVATION EXCHANGE

UNIVERSITY of WASHINGTON

Natural Language Processing and Sentiment Analysis for Verbal Aggression Detection; A Solution for Cyberbullying during Live Video Gaming

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INTRODUCTION

Due to COVID-19, online gaming has grown, and in turn, "toxicity" and cyberbullying have risen. Exhibiting toxicity can impact mood and relationships continuing into post-gaming sessions. Moreover, experiencing constant harassment from toxic players can lead to depression in others. About 50 million gamers in the United States are kids under the age of 18, and on these gaming platforms, there are over 150 million adults potentially influencing younger gamers with explicit language and behaviors. One of the greatest problems is that gamers struggle with self-monitoring and recognizing their state of mind. To combat this issue, Tempr provides a unique approach through self-awareness and positive reinforcement to help decrease verbal aggression and cyberbullying over time.

MATERIALS AND METHODS

Tempr uses IoT controlled LED strips mounted behind a TV so that visual feedback is line-of-sight and functions as relief lighting, an IoT outlet, a microphone, and various APIs for speech and sentiment analysis. Tempr also provides a parent-oriented portal for configuration and monitoring (Fig 1).

Tempr actively transcribes gamer speech-to-text and runs sentiment analysis and inappropriate word detection to generate a score for visual feedback through the LED strip (Fig 2) and parental feedback through the parental companion app. Aggression and curse words affect current gameplay through visual feedback, including session termination, and positive/negative behavior increase/decrease future gaming sessions. Lastly, parents can override accumulated time allowance and view statistics like sentiment and time allowance over time, and number of curse words per session.

CONCLUSION

The Tempr prototype illustrates the feasibility of real-time natural language processing and sentiment analysis to detect verbal aggression during live video game play. Tempr provides visual feedback of sentiment analysis plus data tracking of aggression to help parents and children reduce toxicity during gameplay

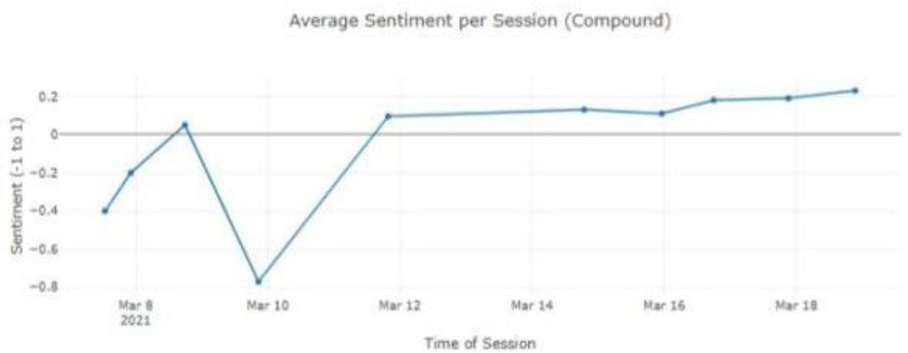

Figure 3: Sentiment Trend Over Time

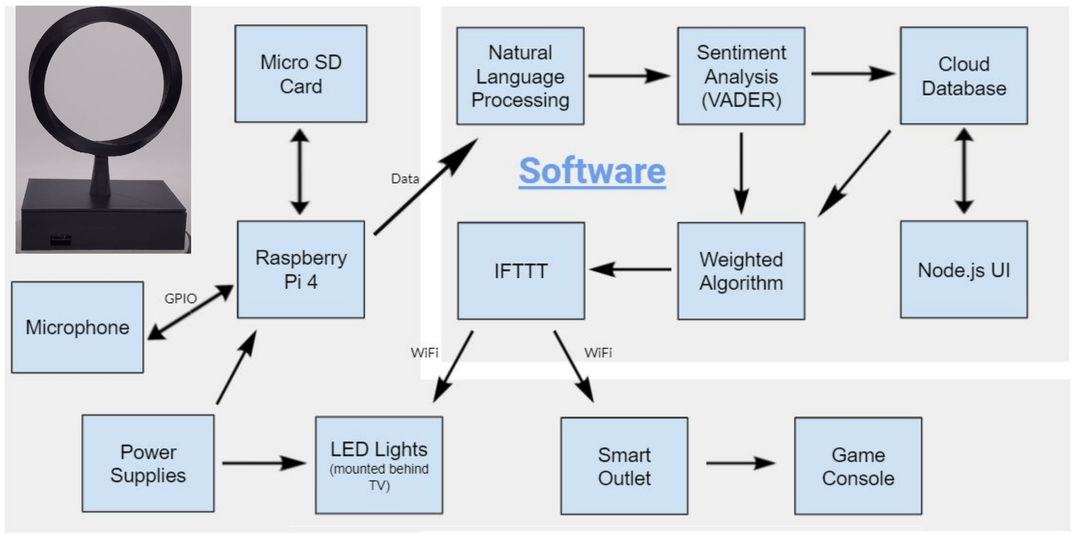

Figure 1: Hardware and Software Architecture

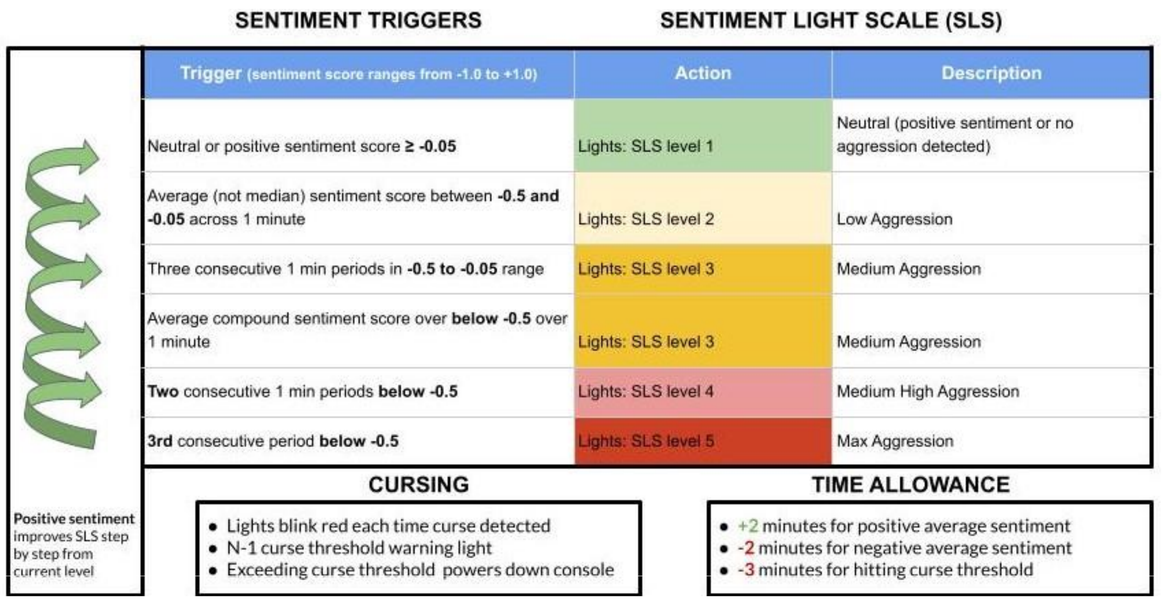

Figure 2: Sentiment Feedback Ruleset