Towards a Persuasive Computing Approach for Cyberbullying Awareness in Social Media

Farah Nadia Azman[1,*], Mohamad Lutfi Dolhalit[1],

[1]Fakulti Teknologi Maklumat dan Komunikasi, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka, Malaysia

[*]Corresponding e-mail: farah@utem.edu.my

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ABSTRACT – Traversing the age of Industry 4.0, cyberbullying has become a growing concern for Malaysia and worldwide connected citizens with the rapid rise of Internet of Things device consumption. With the ever-increasing cyberbullying occurrences via social media, it is imperative to harness cyberbullying awareness that is valuable towards sustainable development of society. Although there have been social and technological efforts responding to cyberbullying misbehavior, these studies centered on cyberbullying causal factors and internet safety technologies designed for battling cyber victimization; rather than restraining the act of engaging in cyberbullying. Hence, this study proposes a persuasive computing approach to cultivate awareness on cyberbullying. Established as interactive technology that changes persons' attitudes or behaviors, adoption of persuasive computing techniques into screen-based interaction allows principled communication on cyberbullying; through persuasive coaching, monitoring, empathic, and engaging application. Therefore, this paper appoints the motivations and importance of further research on investigating how persuasive computing can be utilized for influencing users' awareness towards cyberbullying.

1. CYBERBULLYING IN SOCIAL MEDIA

Closely tied to Industry 4.0 foundation, the vision of Society 5.0 intends to ensure that the interplay between machines and people gains greater status, where moral, ethical and economic aspects of digitization are rooted as a whole [1]. This means human-centered technology and innovation should correspondingly aim for solving social challenges aligning with Industry 4.0 revolution.

Cyberbullying is an act of aggression intended to cause harm or distress repetitively which occurs among individuals whose relationship is characterized by a power imbalance [2]. In social media, this comprises sending threats or insults, dissemination of personal information and posting inflammatory messages or derogatory remarks [3].

According to [4], Malaysian netizens are at a risk of being cyberbullied with the worrying average of 58% of the respondents experienced cyber harassment on social media. It is also reported that cyberbullying is among the top five online threats in Malaysia [5]. Critically in social media, cyberbullying in can cause more psychosocial and emotional damage than traditional offline physical bullying because of the increased volume, scale, scope, and number of witnesses [6]. Worse still, cyberbullying can spread with a rapid, broad scale that it is almost unstoppable [7] [8].

With 20.4 billion Internet of Things devices to be deployed by 2020 [9] which dominant in the daily social experience of connected citizens, there have been efforts in responding to cyberbullying issues. Nevertheless, most studies in Malaysia appeared to focus on causal factor related to cyberbully rather than enhancement of awareness towards cyberbullying misbehaviour [10] [11]. Moreover, internet safety technologies are not effective against cyberbullying, mainly because they have been designed for battling cyber victimization rather than preventing the act of engaging in cyberbullying [12].

Since the risks of using technology are often determined by human behaviour rather than the technologies themselves [3], a principled computational approach should be adopted concentrating on nurturing social responsibility and respectful interactions in social media for cyberbullying engagement prevention.

2. PERSUASIVE COMPUTING

Responding to the above issues, this study proposes a persuasive computing approach for influencing users' awareness towards cyberbullying engagement. As an interdisciplinary research field, persuasive computing is defined as "interactive technology that changes a person's attitudes or behaviors", aiming at increasing wellbeing and quality of life [13].

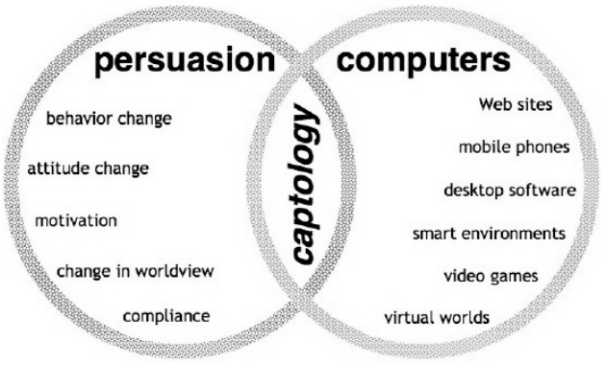

Figure 1 Persuasive Computing [13]

Initially to cultivate awareness on cyberbullying, the computational approach in should resolve around the behavioral-based groundwork stated in Table 1:

Table 1 Understanding behavioral aspects for cyberbullying awareness.

Aspect	Description
Who	Common traits, personality and appearance of cyberbullying victims.
What	Harmful acts in social media which are encompassed as a form of cyberbullying.
Why	What makes a person engage in cyberbullying.
Where	Which 'section', page or features of the social networking application the cyberbullying frequently occur.

Then, instigated from agent-based system techniques for minimizing cyberbullying occurrences [14], this study adopts apposite persuasive multimedia strategies ([15], [16]) and persuasive computing principles [13] in designing interactive scenarios for awareness on cyberbullying as follows:

a. **Reduction** – cyberbullying facts must be as simple as possible.
b. **Tunneling** – system leads users through predetermined sequence of events.
c. **Tailoring** –actions or information to user needs and characteristics are customized.
d. **Suggestions** - certain action towards cyberbullying behaviour is suggested at a fitting moment.
e. **Self-monitoring** – user monitoring his/her behaviour in order to be aware of cyberbullying actions.
f. **Surveillance** – monitoring the behaviour of another agent.
g. **Conditioning** –certain behavior is rewarded to shape behavior.

Thus, upcoming work discusses on the design, development and evaluation of interaction techniques for communicating cyberbullying awareness; through coaching, monitoring, empathic, and engaging application based on the proposed approach.

3. SUMMARY

This paper appoints the motivations and importance of cultivating cyberbullying awareness in social media. General computational approach which adopts persuasive technology principles based on behavioral-based foundations is discussed. In conclusion, promoting human-centered technology and innovation that correspondingly aim for solving social challenges aligning with Industry 4.0 revolution is indicatively valuable towards sustainable development of society.

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