Artificial Intelligence in Shaping Preferences and Countering the Radicalization Process

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Abstract—This white paper suggests more research is needed in how Artificial Intelligence can shape preferences and decision-making, specifically regarding the radicalization process of violent extremists through the internet. We envision algorithm-based technology can be used to deter radicalization by influencing the user’s preferences and decision-making outcomes.

Keywords—Artificial Intelligence, AI, preference model, decision analysis, social media, countering violent extremism, Project Maven

I. INTRODUCTION

Terrorist groups such as the Islamic State have made unprecedented use of internet and social media tools to radicalize individuals and promote violent extremism. Terrorist groups can influence a decision maker’s preferences and decision analysis through targeted branding and promotion of their ideology. To more effectively fight the Islamic State, in April 2017 the U.S. Department of Defense created an Algorithmic Warfare Cross-Functional Team known as Project Maven. Project Maven seeks to accelerate the integration of AI by automating the analysis of aerial surveillance captured by Unmanned Aerial Vehicles (commonly known as drones) over Iraq and Syria. Project Maven will also consolidate algorithm-based technology initiatives that “develop, employ, or field artificial intelligence, automation, machine learning, deep learning, and computer vision algorithms” (Work 2017). This paper suggests algorithm-based technologies should be explored in the context of deterring the radicalization process by influencing user preferences and decision-making through the social media and the internet.

II. LITERATURE SURVEY

The modern definition of Artificial Intelligence (AI) is “a rational and flexible agent that senses its environment and takes some action which maximizes its chance of success at some predetermined goal” (Alzahrani 2016). Notably, AI makes use of machine learning algorithms through a deep and complex neural nets. AI clusters data orders of magnitude beyond human capability which aids in disciplines such as criminal forensics and computer security. Additionally, web browsers such as Google and social media sights like Facebook have made use of AI to rank search preferences and conduct targeted advertising.
Similarly, online retailers such as Netflix and Amazon use algorithms to understand consumer preferences and suggest future purchases (Marr 2016).

Much of initial funding in AI came from the Defense Advanced Research Projects Agency (DARPA) (Buchanan 2005). Modern military applications of AI include equipment such as drones, the Gladiator Tactical UGV (used by US Marine Corps), ViPer (used by Israeli Forces), and the Talon (used for bomb-disposal) (Alzahrani 2016). AI seeks to produce computational artifacts that can help humans in [several] problems acting on their behalf; reasoning, explaining, learning and in general handling preferences are central issues to be tackled in any non-trivial artificial intelligence system” (Pigozzi, et. al. 2016).

In the context of decision-making, default preferences describe a decision maker’s pre-existing preferences. In a 2016 study, Castelo, et.al. found “default effects are significantly enhanced when the intent of the choice architecture intervention is consistent with the preferences of the decision maker and when existing preferences are uncertain” (Castelo, et. al. 2016). Therefore, it is plausible a decision maker is more likely to change pre-existing preferences when presented with a new architecture.

III. PROPOSED WORK

In this study, we will start with how the adversary operates with regards to recruitment, propaganda, exploitation, and motivating individuals to conduct their next attack. In addition, we will assess how companies use branding and marketing algorithms to target consumer populations. There are programs currently in use that can assess these data points automatically after entering the specific parameters: both terror or intelligence analysts assess pulse indicators to understand what people associated with adversarial elements are expressing and their complete sentiment. The next step in this process would be to study the behaviors of these adversarial elements and create a typology to categorize them. For each category of behavior, researchers would develop a parallel response to counteract them with the intention for this parallel response to become automated in the future. Finally, the effectiveness of parallel responses must be measured; overtime more effective parallel responses will be used to counteract adversarial behavior. On a larger scale, effectiveness of the parallel response may actually mitigate radicalized recruitment.

REFERENCES


