Detection and Analysis of Online Extremist Communities

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Online social networks have become a powerful venue for political activism. In many cases large, insular communities form that have been shown to be powerful diffusion mechanisms of both misinformation and propaganda. In some cases these groups’ users advocate actions and policies that could be construed as “extreme” along any distribution of opinion, and are thus called Online Extremist Communities (OECs). However, little is known about how these groups form or the methods used to influence them. The work in this thesis provides a new ways for researchers to answer three critical research questions with respect to online marketing and its role in geopolitical opinion:

• How can we detect large dynamic online activist or extremist communities?
• What automated tools are used to build, isolate, and influence these communities?
• How can we gain novel insight into large online activist or extremist communities?

I leverage the various affordances Online Social Networks offer for group curation by developing heterogeneous, annotated graph representations of user communities. I then use unsupervised methods to detect extremist discussion cores which can be used to efficiently build training sets for supervised detection of the greater OEC. I also present illustrative knowledge extractions available to researchers when OECs are detected at scale. This methodological pipeline has also proven useful for social botnet detection, and I have observed large, complex social botnets that appear to be a powerful tool used for propaganda dissemination.

Throughout this thesis I provide Twitter case studies including communities focused on the Islamic State of Iraq and al-Sham (ISIS), the ongoing Syrian Revolution, the Euromaidan Movement in Ukraine, as well as the “alt-Right.”

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