PAN 2019 Report

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While social media offers excellent communication opportunities, they also increase the vulnerability of young people to threatening situations online. Child sexual abuse and pedophilia are both problems of great social concern. Therefore, the protection of children in cyberspace is an extremely critical problem faced by our society across geographical and cultural boundaries. Successful prevention of these crimes is dependent upon the adequate detection of potentially harmful messages, and the information overload on the Web requires intelligent systems to identify potential risks automatically. Author identification attempts to reveal the authors behind texts. It is an emerging area of research associated with applications in literary research, cyber-security, forensics, and social media analysis. In this edition of PAN, they studied two task, the novel task of cross-domain authorship attribution, where the texts of known and unknown authorship belong to different domains, and style change detection, where single-author and multi-author texts are to be distinguished.

Author profiling tries to detect the gender and age of the authors. After having addressed several aspects of author profiling in social media from 2013 to 2018 (age and gender, also together with personality, gender and language variety, and gender from a multi-modality perspective), this year, PAN 2019 contained four main parts, including authorship attribution, style change detection, gender prediction, and celebrity profiling.

1 Authorship Attribution

Authorship attribution is an essential problem in a lot of areas such as information retrieval and computational linguistics, and more importantly, in law and journalism where knowing the author of a document (such as a ransom note) may enable, e.g., law enforcement to save lives. This task can be difficult in cross-domain conditions when documents of known and unknown authorship come from different domains (e.g., thematic area, genre).

This edition of PAN focuses on cross-domain attribution in fanfiction, a task that can be described as cross-fandom attribution in fanfiction. In more detail, all documents of unknown authorship are fanfics of the same fandom (target fandom), while the documents of known authorship by the candidate authors are fanfics of several fandoms (other than the target-fandom). Fanfiction refers

to fictional forms of literature that are nowadays produced by admirers ('fans') of a specific author (e.g., J.K. Rowling), a novel ('Pride and Prejudice'), TV series (Sherlock Holmes), etc. The task is given a set of documents (known fanfics) by a small number (up to 10) of candidate authors, identify the authors of another set of documents (unknown fanfics) in another target domain.

2 Style Change Detection

Many approaches have been proposed recently to identify the author of a given document. Thereby, one fact is often silently assumed: i.e., that the only author indeed writes the given document. For a realistic author identification system, it is, therefore, crucial to at first determine whether a document is single- or multiauthored. Given a text, decide whether or not it contains style changes or not, i.e., if it was written by an individual or multiple authors. If it is written by more than one author, determine the number of involved collaborators.

3 Celebrity Profiling

Celebrities are among the most prolific users of social media, promoting their personas and rallying followers. This activity is closely tied to genuine writing samples, rendering them worthy research subjects in many respects, not least author profiling.

The Celebrity Profiling task this year is to predict four traits of a celebrity from their social media communication. The traits are the degree of fame, occupation, age, and gender. The social media communication is given as the teaser messages from past tweets. The goal was to develop a piece of software which predicts celebrity traits from the teaser history. Concerning my Ph.D. project, gender prediction is the most crucial part for us, and the best result for gender prediction in celebrity prediction had an accuracy of 0.726.

4 Bots and Gender Profiling

Social media bots pose as humans to influence users with commercial, political, or ideological purposes. For example, bots could artificially inflate the popularity of a product by promoting it and/or writing positive ratings, as well as undermine the reputation of competitive products through unfavorable valuations. The threat is even more significant when the purpose is political or ideological (see Brexit referendum or US Presidential elections). Fearing the effect of this influence, the German political parties have rejected the use of bots in their electoral campaign for the general elections. Furthermore, bots are commonly related to fake news spreading. Therefore, to approach the identification of bots from an author profiling perspective is of high importance for marketing, forensics, and security.

References

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