May 2018

Extending Safe Search Functionality for Identifying Child-Safe and Educational Web Resources

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Abstract
Safe search is a filtering strategy used by search engines for the purpose of preventing children from accessing web resources that either contain adult content (i.e., pornography and nudity) or promote violence (i.e., include hate-speech and offensive language). Unfortunately, safe search is not always the perfect deterrent: at times, pornographic and hate-based resources slip through the filter, whereas, other times, resources that may be relevant to a child's educational search context are misconstrued as being inappropriate, and are therefore filtered. In this paper, we first examine the functionality of a number of existing safe search filters. Based on our findings, we present ongoing efforts to address some of the limitations with traditional safe search filtering strategies.
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Motivation

- Children prefer to utilize popular search engines for their educational and leisure searches. However, they may have access to information deemed unsafe for them.
- Even if popular and children-oriented search engines make available Safe Search, a strategy meant to prevent children from accessing inappropriate content such as pornography or hate-speech, Safe Search may be strict in filtering educational resources.

Goal

1. Investigate the functionality of Safe Search filters available on a number of search engines designed for diverse users, as well as for children.
2. Introduce KiseRF, a filtering strategy that addresses some of the limitations identified with traditional Safe Search filtering strategies.

Research Questions:
1. Are existing Safe Search filters too restrictive when it comes to retrieving resources that are valid in an educational context?
2. Do traditional Safe Search filters effectively identify web resources with sexually explicit content?
3. Are traditional Safe Search filters effective in disregarding web resources that potentially promote violence?

Limitations of Traditional Safe Search Filters

- Fig. 2: Examples that showcase some limitations of traditional safe search filters.

Data Sources

- DMOZ open directory project - Kids Safe Web Resources.
- Alexa - Adult Content.
- Idaho Digital Learning Academy - Educational Web Resources.
- Google’s Bad word list - Collection of Bad Keywords.
- Hatebase.org: Hate Speech Lexicons.

Experimental Framework

- Fig. 3: Correlation among features in KiseRF.

Initial Assessment

- Fig. 4: Percentage of web resources retrieved by examined safe search filters for different content categories.

Findings and Future Work

- Some educational resources were disregarded by the Safe Search filters.
- Children oriented search engines were particularly strict in disregarding sexually explicit content.
- Results show that there is a need to improve existing Safe Search filtering strategies.

In the Future:
- Conduct more exhaustive evaluation.
- Propose novel features for retaining educational web resources.