#### Boise State University ScholarWorks

2018 Graduate Student Showcase

Graduate Student Showcases

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

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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.

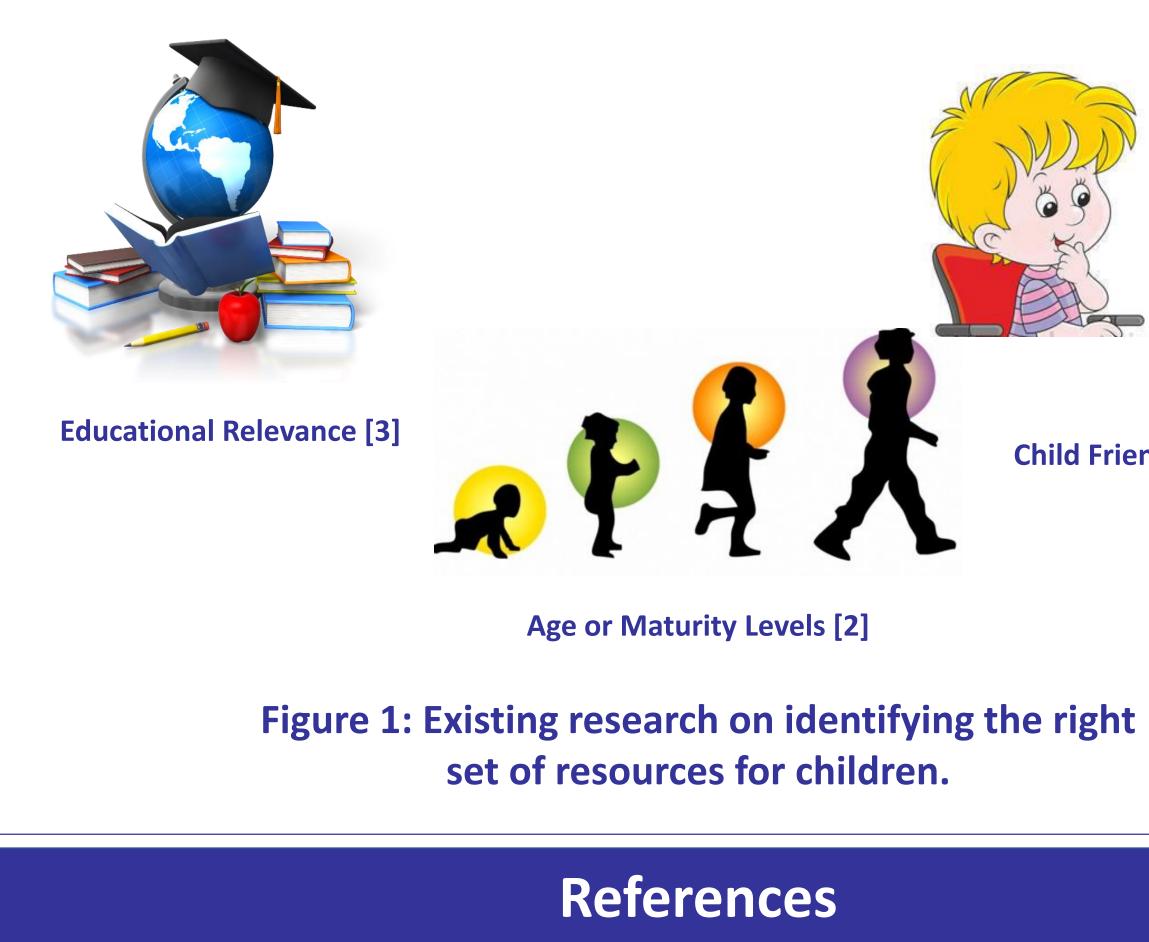
## Goal

- 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?

# **Related Work**

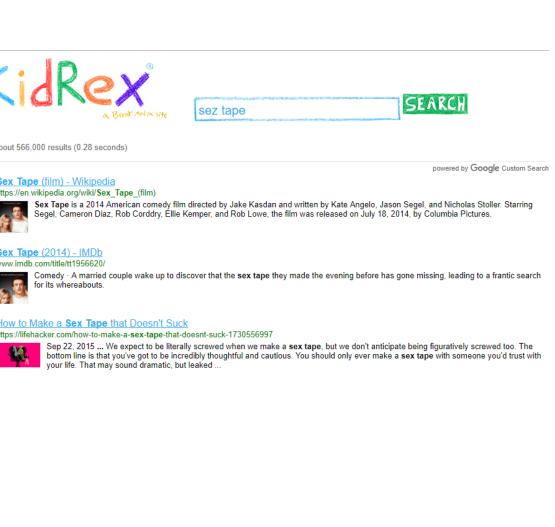


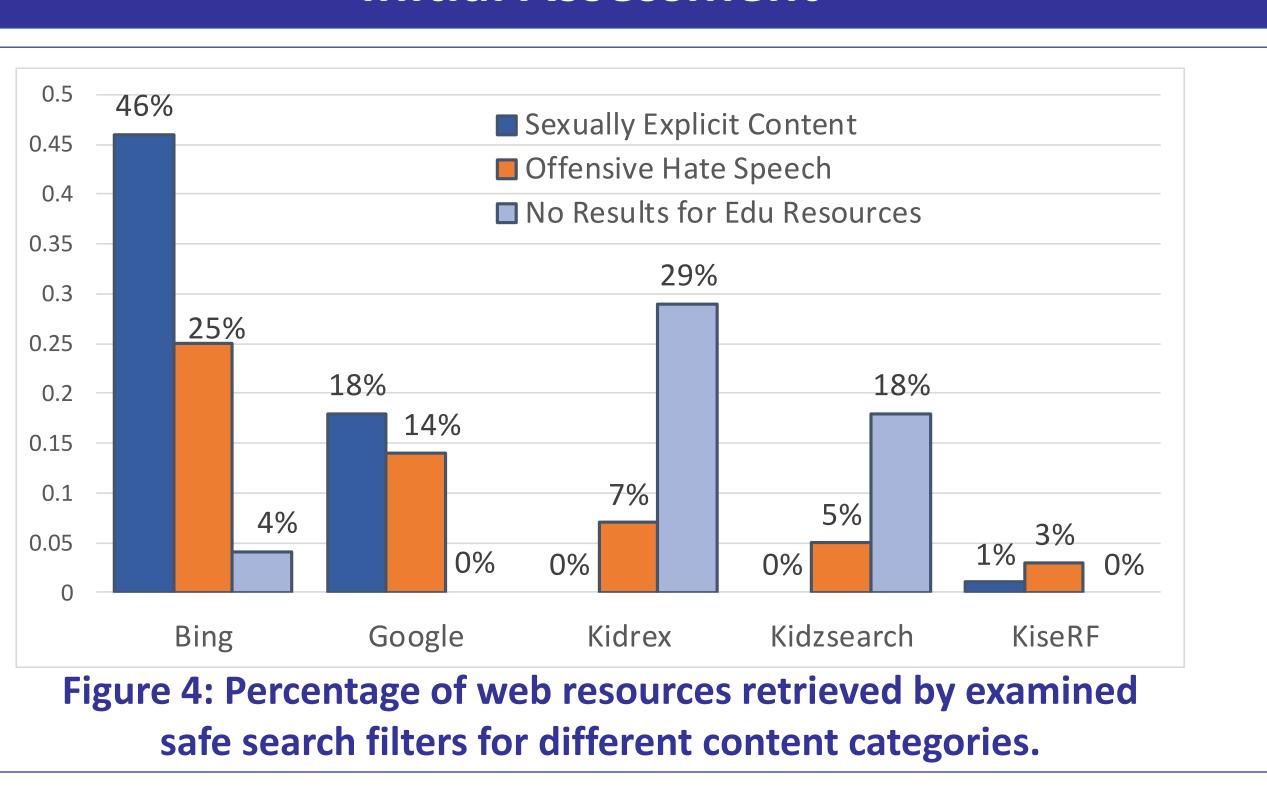
- 1. C. Eickhoff, P. Serdyukov, and A. P. de Vries. Web page classification on child suitability. In Proc. of ACM CIKM, pages 1425–1428, 2010. 2. N. Gupta and S. Hilal. Analysis of web content filtering factors and the
- impact of sieve coupons. IJET, 4(4), 2012.
- 3. N. Gupta and S. Hilal. Algorithm to filter & redirect the web content for kids. IJET, 5, 2013.

#### **Extending Safe Search Functionality for Identifying** X Child-Safe and Educational Web Resources \*Oghenemaro Anuyah, Ion Madrazo Azpiazu, and Maria Soledad Pera Boise State University, Department of Computer Science Kids Safe Search Results Filter- KiseRF Limitations of Traditional Safe Search Filters Feature Analysis: KidRex ster Mile site set tape KidRex Breat Arlin site Sex tape • **Retain Educational Resources**: SEARCH • Educational words significance - TFIDF scores. About 566.000 results (0.28 second OOPS. Try Again. • Children-oriented vocabulary - Language Modeling. Identify Sexually Explicit Content: • Proportion of sexually-explicit words. Distinct sexually-explicit words. , 2015 ... We expect to be literally screwed when we make a sex tape, but we don't anticipate being figuratively screwed too. I line is that you've got to be incredibly thoughtful and cautious. You should only ever make a sex tape with someone vou'd trus • Proportion of misspelled words. • Distinct Misspelled words. Identify Hate Speech: • Proportion of hate speech words. Kidz Searci • Distinct hate speech words. no top on woman Administry Google KL\_kid\_friendly Also try: women s tops · best women's blouses · latest tops for wom breast tissu 339 000 000 Results Any time KL\_non\_kid\_friendly Woman On Top Sex Positions - Girl on Top Sex - Cosmo web maps who falls will most parter inditida www.cosmopolitan.com/woman-on-top-sex-positions hate\_speech\_counts o him, nothing could be steamier than a sexy **woman** calling the shots; so don't be shy, Just read thes sion pointers, then climb on top of your cutie and enjoy the ride We don't have any results for this term, but you can try three resources. Woman on Top Sex Position - The Sexiest Mattress Move hate\_speech\_proportion www.cosmopolitan.com/sex-love/advice/a3465/vou-on-top -To assist in adding woman-on-top to your list of stress-free go-to sex posishes, here are four ways naster this move. Get your body in gear unique\_inap\_words\_counts Woman on Top - Free Online Girl Games from AddictingGames www.addictinggames.com/girl-games/womanontop.isp inap\_words\_proportion Woman on Top Game Information, Woman on Top, Author: Games2win Description: Why do you pla hard to get, baby? Demonstrate your loving devotion by leaping to the lady! Rating: TEEN+ Instruction Left/Right arrows to move Up arrow to jump Category: Girl Games Launched: 12/07/07 Plays 2.2/5 **\*\***\*\*\*\* (6.1K misspelled\_words\_count Nees to your worth again with a different with, or <u>contact up to add it is non-suggest more had threads</u> resources misspelled\_words\_proportion Figure 2: Examples that showcase some limitations of traditional safe search filters. Figure 3: Correlation among features in KiseRF. **Initial Assessment Data Sources** DMOZ open directory project - Kids Safe Web Resources. 0.5 Sexually Explicit Content Alexa - Adult Content. 0.45 Offensive Hate Speech Idaho Digital Learning Academy - Educational Web Resources. 0.4 ■ No Results for Edu Resources Google's Bad word list - Collection of Bad Keywords. 0.35 29% Hatebase.org: Hate Speech Lexicons. 0.3 25% 0.25 0.2 **Experimental Framework** 0.15 0.1 **Child Friendliness** [1] 4% • **Baseline** *Safe Search* strategies: 0.05 Popular search engines: Google and Bing. Children-oriented search engines: Kidzsearch and Kidrex. safe search filters for different content categories. **Gold Standard**: • Cyren Web URL categorizer. **Findings and Future Work** • **Classification Algorithm**: Some educational resources were disregarded by the *Safe Search* filters. • Random Forests - Achieved high performance than logistic regression, Children oriented search engines were particularly strict in disregarding GBC and MLP classifiers. sexually explicit content. Results show that there is a need to improve existing *Safe Search* filtering • **Dataset**: strategies. • 80:20 Train and Test Split ratio.

• Queries:

• Hate speech, Educational and Sexually-explicit keywords.





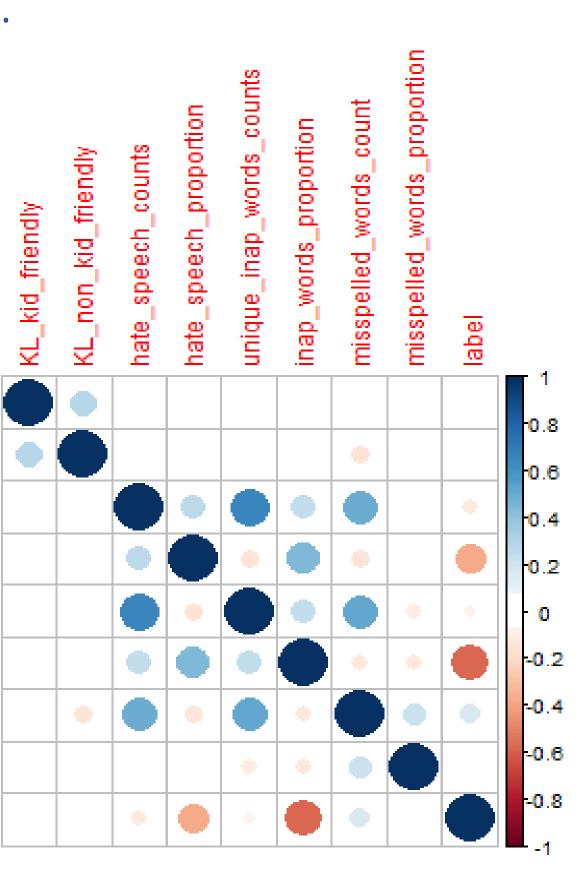
### In the Future:

- Conduct more exhaustive evaluation.





**People and** Information Research Team



Propose novel features for retaining educational web resources.