

# Webサイトの危険度推定を支援する情報提示手法

-サイトの危うさをどのように子どもに学習させるか？-

## A Visualization Method for Helping Children Assess the Risk of Websites

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### どんな研究？

子どもがネット社会で生きる力を育むためには、フィルタリングによる有害サイトを排除した環境を構築するのではなく、Webサイト特性を理解しながら、サイトの危険度評価を子ども自身で行える環境を提供することが重要です。本研究では、サイトの雰囲気や構造など視覚的特性を操作しながら、危険サイトの推定やその特徴を学習するシステムを開発しました。

### What's it for?

An effective approach for helping children assess website risk is to provide an environment in which children can better assess a website's features and determine for themselves the risk of accessing the site. We constructed a website visualization system by operating search facets for websites' appearance and structure.

### Background & Objective

Even children use the Internet

- for getting information, shopping, talking with friends
- but **increasing cybercrimes** which children get in trouble

#### Against cybercrimes

Protection

- avoid high-risk websites by **filtering**
- simulate cybercrimes in **case studies**
- ⇒ children are **closed off from actual cyberspace**

Resilience

- report details to family or police
- consult with professional associations
- ⇒ children **cannot do this by themselves**
- it is important for adults to notice trouble asap

#### Motivation

Real issue

- children cannot live in a safe cyberspace forever
- risky sites are created every day

Ideal solutions

- children should be **taught how to identify high-risk websites in unfiltered cyberspace**
- adults should **notice risky websites asap**

⇒ Both may be satisfied with **effective visualization method**

Our objective is to propose a visualization system for helping children assess the risk of websites

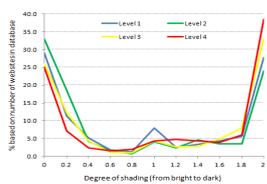
Children should be able to

- **visualize website's features** from various viewpoints
- **estimate the risks** of accessing websites
- **access not only 'safe' websites** but also potentially risky websites

### Usability Test

12-year-old boy with his mother and two 18-year-old girls

- listened to system operations instructions for 10 minutes
- used system freely for 20 minutes
- talked together to get feedback for 10 minutes



Participants could

- **manipulate system by themselves**
- **really enjoy searching and browsing**
- + **distinguish characteristics of high-risk websites**
  - related to 'try', being monotone, darker shading
  - having more images, more links, more pages
  - grater number of letters,
- + **distinguish characteristics of safe websites**
  - being green/blue, primary color, many letters,
  - bigger font size, many kinds of font
- + **distinguish characteristics with no relation to risk level**
  - layout, font most often used (using 'safe font')

### Website Visualization System

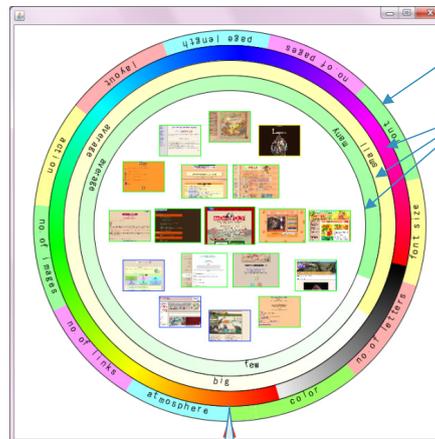
#### Database

13,386 websites with 11 attributes for search facets

- action, color, atmosphere, layout, average page length, total number of images, total number of links, total number of pages, font most often used, average font size, total number of letters

#### 4 risk level

- level 1 : websites from kids' portal site (safe)
- level 2 : websites from general portal site from categories just getting information
- level 3 : websites from general portal site from categories needing money sense
- level 4 : websites for adults or with published warnings (risky)



Category ring

select attributes

Key rings

adjust search keys by rotating key ring

Retrieved results

displayed in real time

High interaction by creating dynamic hierarchies through easy operation

AND search using multiple key rings

- color : red orange
- average font size : big
- total number of images : few

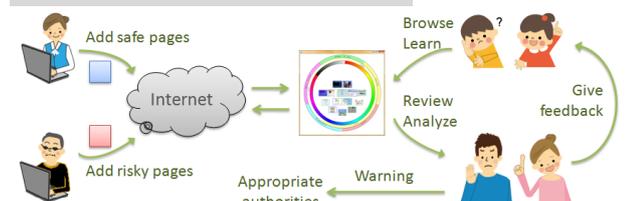
Search keys

#### Retrieved results

Top page for each retrieved website is displayed inside rings

- discrete attributes : display subsequent results by splitting range of search key
  - continuous attributes : each point of key ring is determined as different search key
- Each top page image is bordered with different color according to risk level
- blue (lower risk), green, yellow and red (high risk) rectangles are displayed

### Protection and Resilience



#### Possibilities of this visualization method

- + not only to help assess website risks for children but also to analyze websites for adults
- check children's actions in web browsing
- find problematic unofficial websites for school