

## Using user-specific behavioral patterns to describe users in a closed web environment

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### Motivations

- With the growth of networked systems and applications such as eCommerce, the demand for effective computer security is increasing.
- The most common access control mechanism in computing is the combination of a user-id and password.
  - From a technical point of view, this is a low-cost option, the risks of which are well understood.
- We present a different approach for achieving security based on data retrieved from user's interaction with GUI and the information he/she looks up in a closed web environment. Based on the data, we propose the development of a web semantic ontology that would describe a person.

The end effects:

- Optimized web experience in which the user gets the information that he/she is interested in.
- Self-organizing GUI system
- Second level security that will determine if the user behind the screen has changed

### Objective

- Identify user-specific behavioral patterns in a closed web environment.
- Map the patterns to semantic active web node descriptors (key words + content)
- Determine if it is possible to use the patterns to identify users

### Methodology

- Twenty students from Purdue University are currently participating for partial credit toward their Introductory Psychology course.
- Participants are asked to sit in front of a computer and browse through the information presented on a general news portal.
- uLog Lite from Noldus Information Technology is being used to record the following data: date, time, milliseconds between actions, mouse coordinates, and etc.
- The history files (\*.sqlite) of FirefoxPortable 3.6 are used in combination with uLog Lite to map out patterns in the user's behavior.
- The experiment consists of 10 sessions of approximately 30 minutes each.

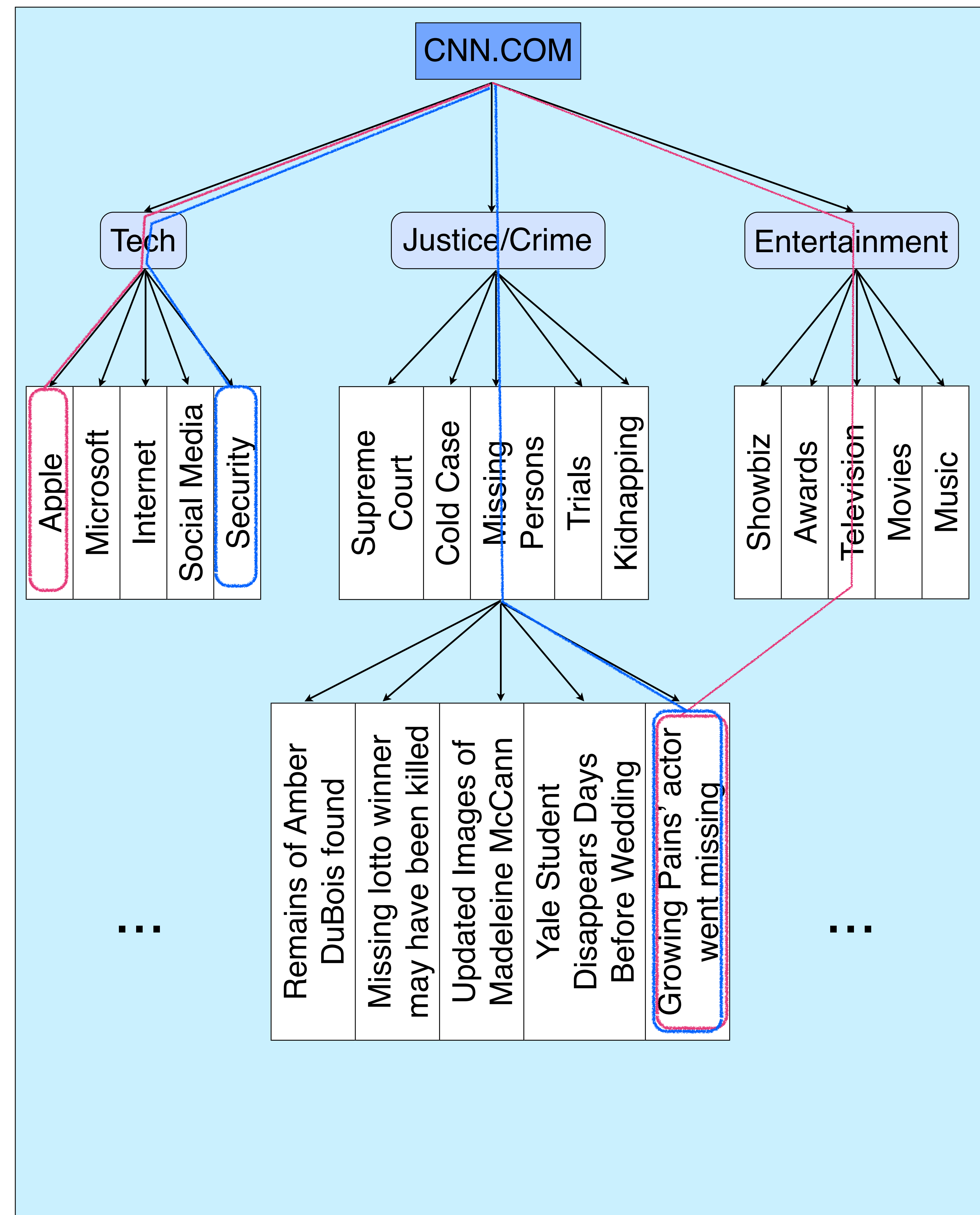


Figure 2 - An example of two different browsing patterns (Blue vs Red) on CNN.com

### Expected Results

- 1 Identify behavior pattern described by semantic nodes.
- 2 Build a semantic web ontology model based on step 1.