

Evaluation of Attention Profiles

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Dr. Luz M. Quiroga
lquiroga@hawaii.edu

William Yip
Information & Computer Sciences
wyip@hawaii.edu

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Project Motivation

- Information Overload

- * *“The state of having too much information to make a decision or remained informed about a topic” - Alvin Toffler, 1970.*

- Attention Profiling

- * A more-holistic approach of user profiling that captures a person’s attention on the Internet.

- * Store users’ profile, interests, and behavioral patterns in a standardized format.

Attention Profiling: Overview

- Definitions

- * *“Modeling a person’s attention not only capture the **what**, but also the **how, when, to which end, and for how long** a person interacts with a particular resource” - Roda & Nabeth, 2007.*
- * *Attention Data: “capturing and taking advantage of users’ **interactions** with the content (e.g. downloading, buying, listening, reading feeds) and users’ **reactions** to the content (e.g. ratings, reviews, tags) - Vuorikari, 2008.*
- * *Attention Economy: human attention is the new “valuable currency” - Davenport & Beck, 2001.*

Attention Profiling: Capturing and Interpreting

- Capture

- * Physical (e.g. eye-tracking, mouse gestures, and key strokes)

- * Psycho-Physiological (e.g. heart rate, blood pressure)

- * Application (e.g. Last.fm, Pandora)

- * User-Directed Input

- Interpret

- * Building relations among different actions (e.g. teachers repeatedly create digital resource in a particular topic).

- * Most beneficial for IF systems such as recommenders.

Attention Profiling: Properties

- Portability
 - * Standardized format to be utilized by multiple applications.
 - * Accessible and readable by humans.
- Privacy
 - * Users in control of their own attention data.
 - * Transparent to users on what is being captured and how it is being utilized.
- Context
 - * Capturing not only the *what*, but also the *when*, *how*, *when*...

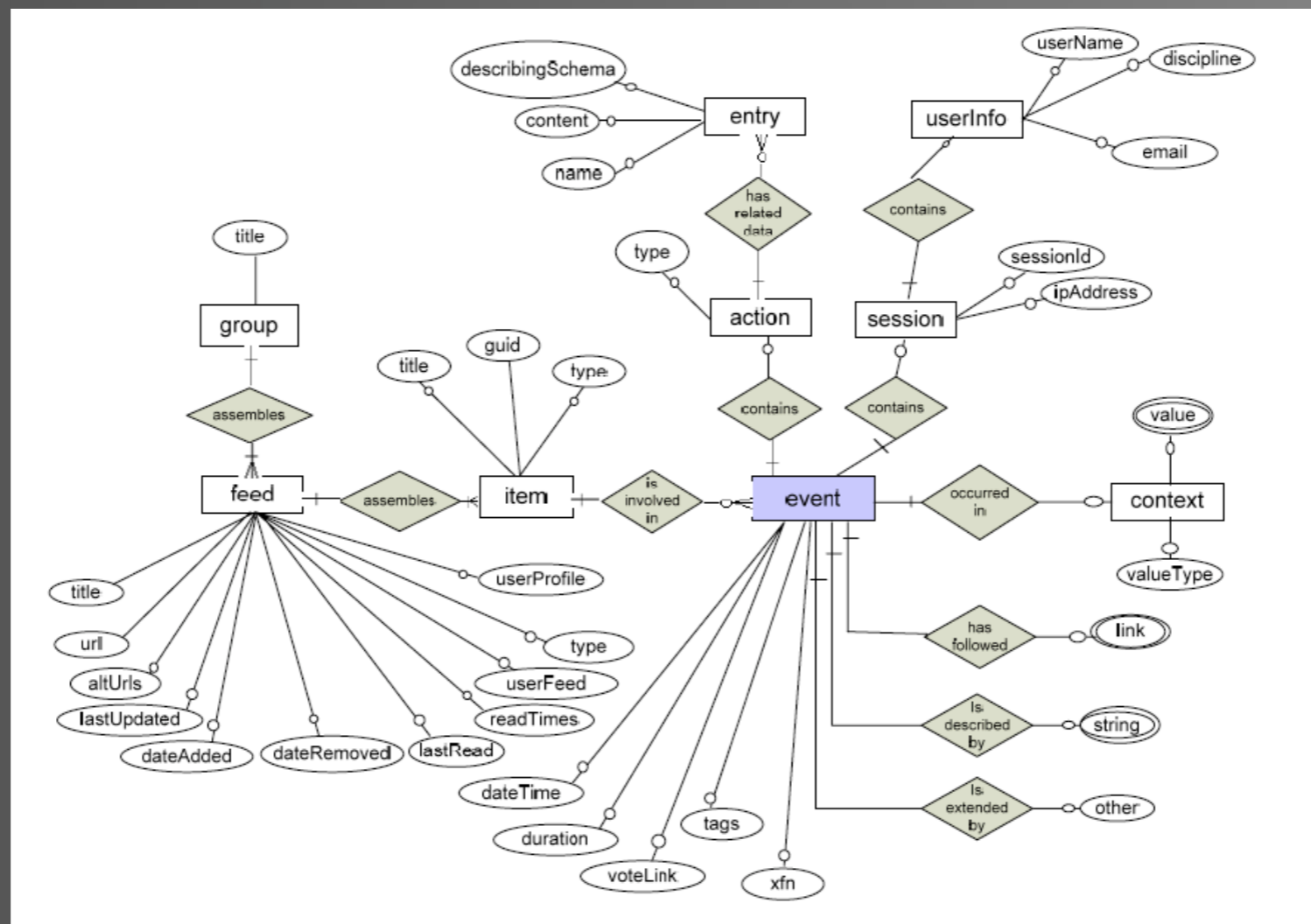
Current Framework: AttentionXML

- Introduced in 2004 by AttentionTrust, a non-profit organization.

Blog / Feed / Site	Post / Item / Page
<ul style="list-style-type: none">• Title• URL• Alt URL• Etag• Last Updated• Date Added• Date Removed• Last Read• Read Times• User Title• Rel / xfn• Rel / Vote Link• Tags	<ul style="list-style-type: none">• Name / Title• Guid / Identifier• Type (MIME Type)• Etag• Last Updated• Last Read• Duration• Followed Links• Rel / Vote Link• Tags

Current Framework: Contextualized Attention Metadata (CAM)

- Extension to AttentionXML.
- Used primarily in learning environments (e.g. learning object repositories).
- Focus on capturing individual user actions (e.g. searching, editing, downloading).



Current Framework: Attention Profiling Markup Language (APML)

- Used primarily in Web 2.0 sites (e.g. social browsing, social diary).
- Concepts (i.e. keywords) with corresponding *value* attributes.

```
- <Profile name="Music-Recommendations">
  - <ImplicitData>
    - <Concepts>
      <Concept key="The Guess Who" value="1.0" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Cat Stevens" value="0.97552097" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Graham Nash" value="0.9485249" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="America" value="0.93791384" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Jim Croce" value="0.93466264" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Crosby, Stills, Nash & Young" value="0.9275277" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Tom Petty and the Heartbreakers" value="0.90796405" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Don McLean" value="0.90220994" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Donovan" value="0.9008911" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Joan Baez" value="0.8933352" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Albert Hammond" value="0.88024837" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Van Morrison" value="0.8775349" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Free" value="0.8701583" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Paul Simon" value="0.8694084" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Marianne Faithfull" value="0.8559477" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="James Taylor" value="0.8509131" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="The Outfield" value="0.84817046" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Jackson Browne" value="0.84539163" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Bob Seger" value="0.8420915" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Carole King" value="0.8387869" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Status Quo" value="0.8381035" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Steve Miller Band" value="0.83510864" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
      <Concept key="Bachman-Turner Overdrive" value="0.8309556" from="tastebroker.org" updated="2008-11-24T23:58:11"/>
```

Research Objectives

- Current research is focused on the capture and management of attention profiles. Little is known about the validity of these profiles.
- **Question 1:** How accurate are these attention profiles?
 - * Measure how relevant the recommendations are.
- **Question 2:** What factors impact the accuracy?
 - * Variable: How much time a user has spent using a system.

Research Method: Option 1

- **Type:** Case Study (Qualitative) with users of Cluztr, a Firefox browser plugin that provides recommendations to websites that you visit.
- **Method:** In-person interview sessions once a month for 3 consecutive months.
- **Sampling:** Purposive sampling strategy (1-3 users) - target towards students who browse the Internet for academic purposes.
- **Strength:** Covers all aspects of users' activities on the Internet.
- **Weakness:** Cluztr currently in beta development; Hawthorne Effect.

Research Method: Option 2

- **Type:** Cross-Sectional Study (Quantitative) with users of Pandora, an online music recommender.
- **Method:** Online questionnaires to compare users' ratings of recommended artists against values in APML files.
- **Sampling:** Non-random, quota-sampling strategy (3 groups of 20 users - Group 1: fewer than 1 month; Group 2: 1 month - 1 year; Group 3: more than 1 year).
- **Strength:** Users are more willing to share their opinions about music than web browsing in general.
- **Weakness:** Users judge relevancy based on name of artist; not on specific song.

Summary

- Research Question: How accurate are attention profiles?
 - * Challenge: How do we measure accuracy?
 - * Approach: Measure relevance of the provided recommendations.
- Future Work
 - * Decide on research method.
 - * Finish documenting research proposal.
 - * Recruit research participants.