

Evaluating Scrutable Adaptive Hypertext

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Agenda

- What is Scrutable Adaptive Hypertext?
- Scrutiny Tools to be evaluated
- Evaluation Design
- Field Test Evaluation: UNIX Security Course
- Controlled Evaluations: Personalised TV Guide, Holiday Planner

What is Scrutable Adaptive Hypertext?

...Adaptive Hypertext (personalised presentation / navigation) with built-in support for tools that allow users to **understand** and **control** personalisation

Why?

- Control and transparency - good HCI principles
- Guidance for correcting misconceptions / errors in user model
- Privacy legislation
- Curiosity, Reflection, Exploration of alternatives
- Important for critical applications

What is Scrutable Adaptive Hypertext?

Supporting scrutinisation means allowing users to get answers to questions like...

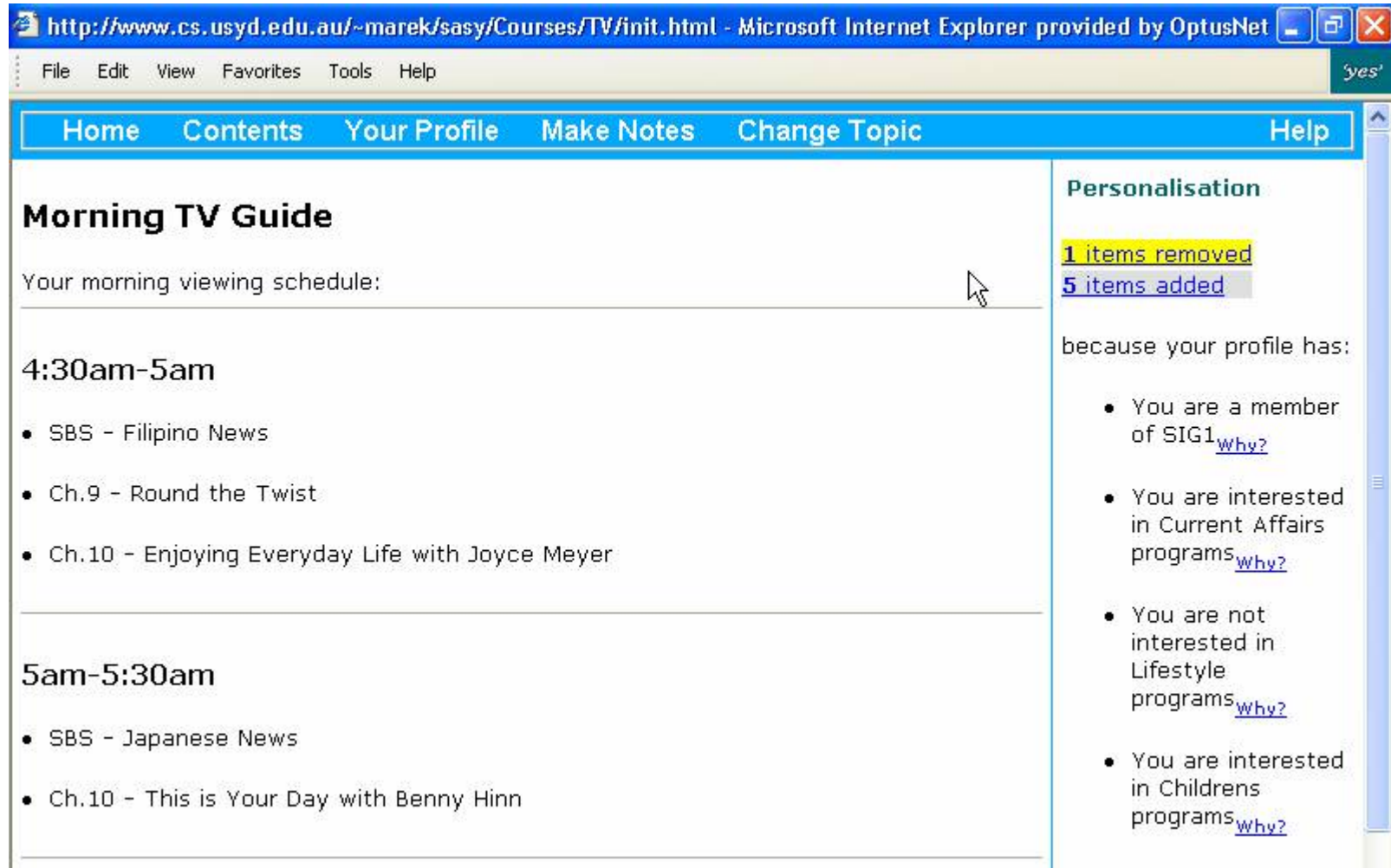
- Why / How was this page personalised to me?
- What does the system know about me?
- Why does it think that?

... and change the personalisation to better suit their needs

- What would the system show me if it thought I was?

SASY

typical personalised page view



The screenshot shows a web browser window with the address bar displaying `http://www.cs.usyd.edu.au/~marek/sasy/Courses/TV/init.html`. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The page has a blue navigation bar with links for Home, Contents, Your Profile, Make Notes, Change Topic, and Help. The main content area is titled "Morning TV Guide" and shows a viewing schedule for 4:30am-5am and 5am-5:30am. The 4:30am-5am slot includes SBS - Filipino News, Ch.9 - Round the Twist, and Ch.10 - Enjoying Everyday Life with Joyce Meyer. The 5am-5:30am slot includes SBS - Japanese News and Ch.10 - This is Your Day with Benny Hinn. On the right, a "Personalisation" sidebar shows "1 items removed" and "5 items added", followed by a list of reasons: "You are a member of SIG1", "You are interested in Current Affairs programs", "You are not interested in Lifestyle programs", and "You are interested in Childrens programs".

http://www.cs.usyd.edu.au/~marek/sasy/Courses/TV/init.html - Microsoft Internet Explorer provided by OptusNet

File Edit View Favorites Tools Help

Home Contents Your Profile Make Notes Change Topic Help

Morning TV Guide

Your morning viewing schedule:

4:30am-5am

- SBS - Filipino News
- Ch.9 - Round the Twist
- Ch.10 - Enjoying Everyday Life with Joyce Meyer

5am-5:30am

- SBS - Japanese News
- Ch.10 - This is Your Day with Benny Hinn

Personalisation

1 items removed
5 items added

because your profile has:

- You are a member of SIG1 [why?](#)
- You are interested in Current Affairs programs [why?](#)
- You are not interested in Lifestyle programs [why?](#)
- You are interested in Childrens programs [why?](#)

Scrutiny Tools

Highlight Tool

Highlight Tool – explain why items were *included* by personalisation

The screenshot shows a Microsoft Internet Explorer browser window displaying a web page from <http://www.cs.usyd.edu.au/~marek/sasy/Courses/TV/init.html>. The page features a navigation bar with links: Home, Contents, Your Profile, Make Notes, Change Topic, and Help. A "Yes" button is visible in the top right corner.

The main content area is titled "Instructions" and includes a key for the highlight tool:

- Removed by personalisation (highlighted in yellow)
- Added by personalisation (highlighted in grey)
- No colour - content added for everyone

The "Morning TV Guide" section shows a viewing schedule for 4:30am-5am. Two items are listed:

- SBS - Filipino News (highlighted in grey)
- Ch.9 - Round the Twist (highlighted in grey)

A red arrow points from the "Ch.9 - Round the Twist" item to a summary box on the right side of the page. This box, titled "Personalisation Highlighted", contains the following information:

- 1 items removed
- 5 items added

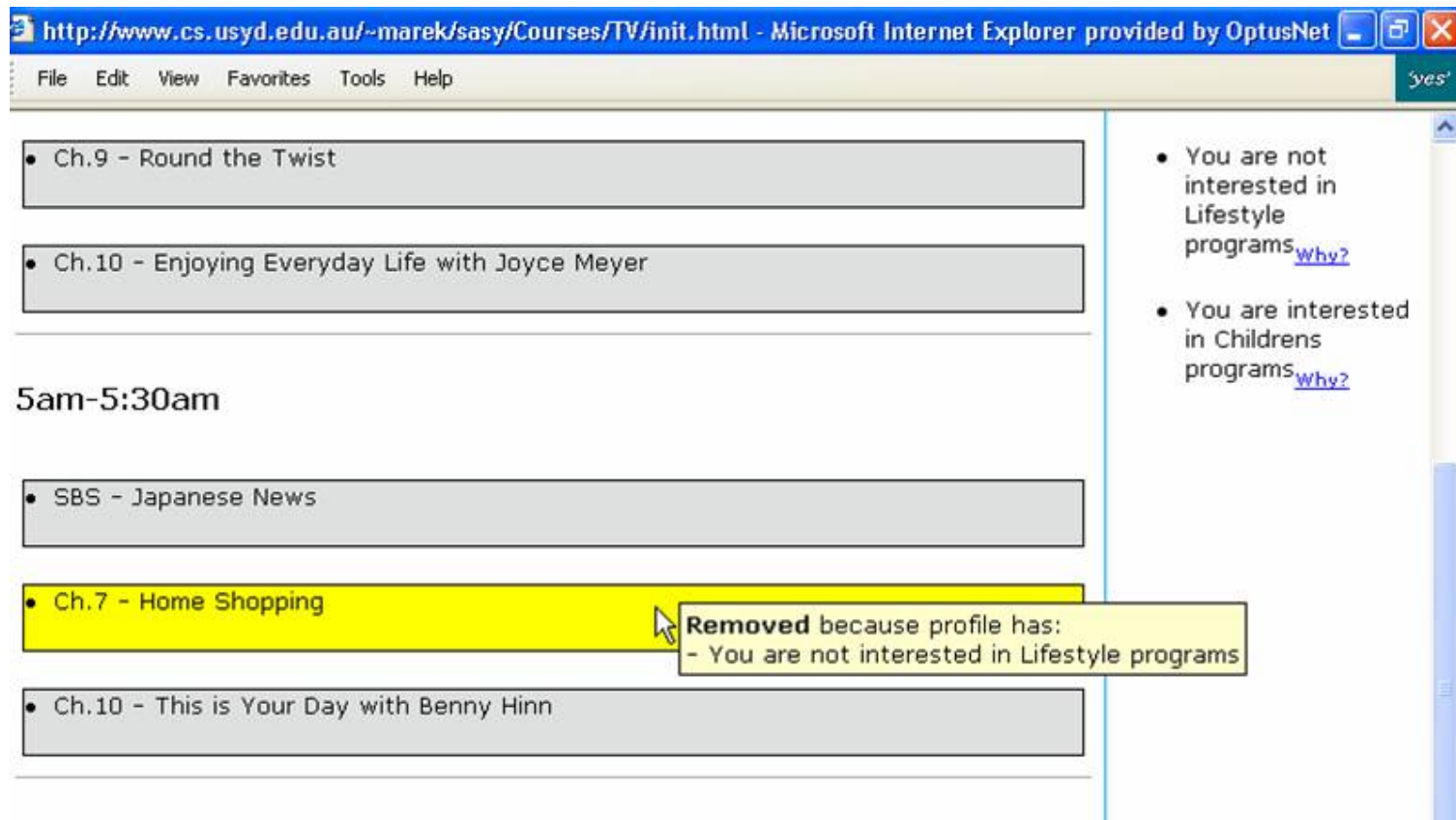
Below this summary, there is a link "Return to normal page view" and a section titled "because your profile has:" which lists several user preferences:

- You are a member of SIG1 [why?](#)
- You are interested in Current Affairs programs [why?](#)
- You are not interested in Lifestyle programs

Scrutiny Tools

Highlight Tool

Highlight Tool – explain why items were *removed* by personalisation



The screenshot shows a Microsoft Internet Explorer browser window displaying a web page from <http://www.cs.usyd.edu.au/~marek/sasy/Courses/TV/init.html>. The page lists TV programs in a list format. The following items are visible:

- Ch.9 - Round the Twist
- Ch.10 - Enjoying Everyday Life with Joyce Meyer
- 5am-5:30am
- SBS - Japanese News
- Ch.7 - Home Shopping** (highlighted in yellow)
- Ch.10 - This is Your Day with Benny Hinn

A tooltip is displayed over the highlighted item, stating: "Removed because profile has: - You are not interested in Lifestyle programs".

On the right side of the page, there is a list of user preferences:

- You are not interested in Lifestyle programs [why?](#)
- You are interested in Childrens programs [why?](#)

Scrutiny Tools

Evidence Tool

Evidence Tool

- See reason why system holds a belief about the user

The screenshot shows a Microsoft Internet Explorer browser window. The address bar displays the URL: `http://www.cs.usyd.edu.au/~marek/sasy/Courses/TV/init.html`. A dialog box is open over the page, titled `http://www.cs.usyd.edu.au/~marek/sasy/explain.cgi?attr=SIG1 ...`. The dialog box contains the following text:

Evidence that You are a member of SIG1:

- You have been included in special interest group 1 (SIG1) which covers religious themes because you are interested in the Getaway show which is travelling to the bible cities this week.

This caused content to be added/removed from the page. If this is wrong or no longer true, [click here to update your profile](#).

Close

The background webpage shows a 'Personalisation' section with the following content:

Personalisation

1 items removed
5 items added

because your profile has:

- You are a member of SIG1 [why?](#)
- You are interested in Current Affairs programs [why?](#)

Scrutinisation Tools

Profile Tool

Profile Tool

- View and change user model to change personalisation

http://www.cs.usyd.edu.au/~marek/sasy/Courses/UNIX3/init.html - Microsoft Internet Explorer provided by Op... yes

Your Profile

Your Initial Preferences

What task do you want to practice in this tutorial?	<input type="radio"/> Learn how to create and run a batch script	
	<input type="radio"/> Learn how to make a web home page	
	<input checked="" type="radio"/> Learn how to run a script from the web	
What course are you in?	<input type="radio"/> First year computer science student	SASY assumes your knowledge of UNIX Shell, File System and Chmod is no knowledge
	<input type="radio"/> SOFT2004 student	a little
	<input checked="" type="radio"/> UIDP student	a little
	<input type="radio"/> Third year computer science student	a little
	<input type="radio"/> Summer School student	a little
	<input type="radio"/> None of the above	no knowledge

So far, SASY has inferred the following about you:

Your Learning Preferences

Do you the odd UNIX joke included in the notes?	<input type="radio"/> Yes - show a few jokes	
	<input checked="" type="radio"/> No	
Do you want to see Henrik's Hints?	<input type="radio"/> Yes - show hints	Pages will include comments in red font pinpointing the really important concepts, as seen by Henrik: a former student. Useful when preparing for an exam but not recommended if you

Internet

Evaluation Design

Difficulties in evaluating Scrutable Adaptive Hypertext:

- Users will not scrutinise often
 - Understandable as this is not user's main goal
- We want to understand how users experience and perceive the user model and personalisation *during* interaction. For this, users should be immersed in realistic tasks (Paramythis et. al. 2001)

Evaluation Design

Strategy

- Model evaluation around the most common scenarios where users might be motivated to scrutinise:
 - User believes personalisation is faulty because it produces unexpected results
 - Content author wishes to debug the adaptive content they have created
 - User is curious as to what the system believes about them or how a page was personalised and wants to explore alternatives
- Evaluate multiple domains

Evaluation 1:

UNIX Security Course Field Test

Aim: Will learners scrutinise and change personalisation to remove material that is distracting to their learning?

Method: Pre-test (knowledge), free use (logging user actions), post-test (knowledge and qualitative).

To motivate scrutinisation:

- We planted jokes and comments in teaching material
- Populated user model with defaults to include advanced concepts and lots of quiz questions

Participants: 84 computer science students learning UNIX security.

Evaluation 1: UNIX Security Course Field Test

Results – Exploring personalisation

- 77% scrutinised in some way (N=84)

Scrutinisation Tool Usage	% Accessed at least once	% Accessed > 2 times
View Profile	51	10
Changed Profile	39	18
Evidence Tool	40	9
Highlight Tool	40	11

Evaluation 1:

UNIX Security Course Field Test

Results - Control over personalisation

- Overall 37% changed profile to change personalisation
- 4% removed Hints, 9% removed Jokes.
But from survey, most users said jokes/hints were not annoying
- 6% reduced number of quiz questions
- 22% changed profile to state they knew more or knew less

Results – Qualitative Survey

- 57% strongly agreed or agreed "it is useful to be able to inspect and control the personalisation".
- Overall Tool Utility: 50% +ve, 40% neutral, 10 -ve

Evaluation 2:

Personalised TV Guide Lab Test

Aim: Measure how effectively SASY supports users to:

- Scrutinise a page to determine why adaptive content is included/removed in relation to their user profile.
- Explain how/why a belief held by the system was instantiated. In this case the belief is inferred by the system through the user's interaction with the system.
- Demonstrate control over the personalisation by altering their profile to change how content is included and removed.
- Affect of online help/training.

Evaluation 2:

Personalised TV Guide Lab Test

Method:

- Users complete series of tasks using personalisation tools and provide feedback after each step. Can measure efficiency and task correctness.
- Qualitative survey at end of experiment to measure user satisfaction and acceptance.
- One group of users trained, other group not trained.

Questions

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SASY:

<http://www.cs.usyd.edu.au/~marek/sasy>

SASY Evaluation:

<http://www.cs.usyd.edu.au/~marek/sasy/eval.html>