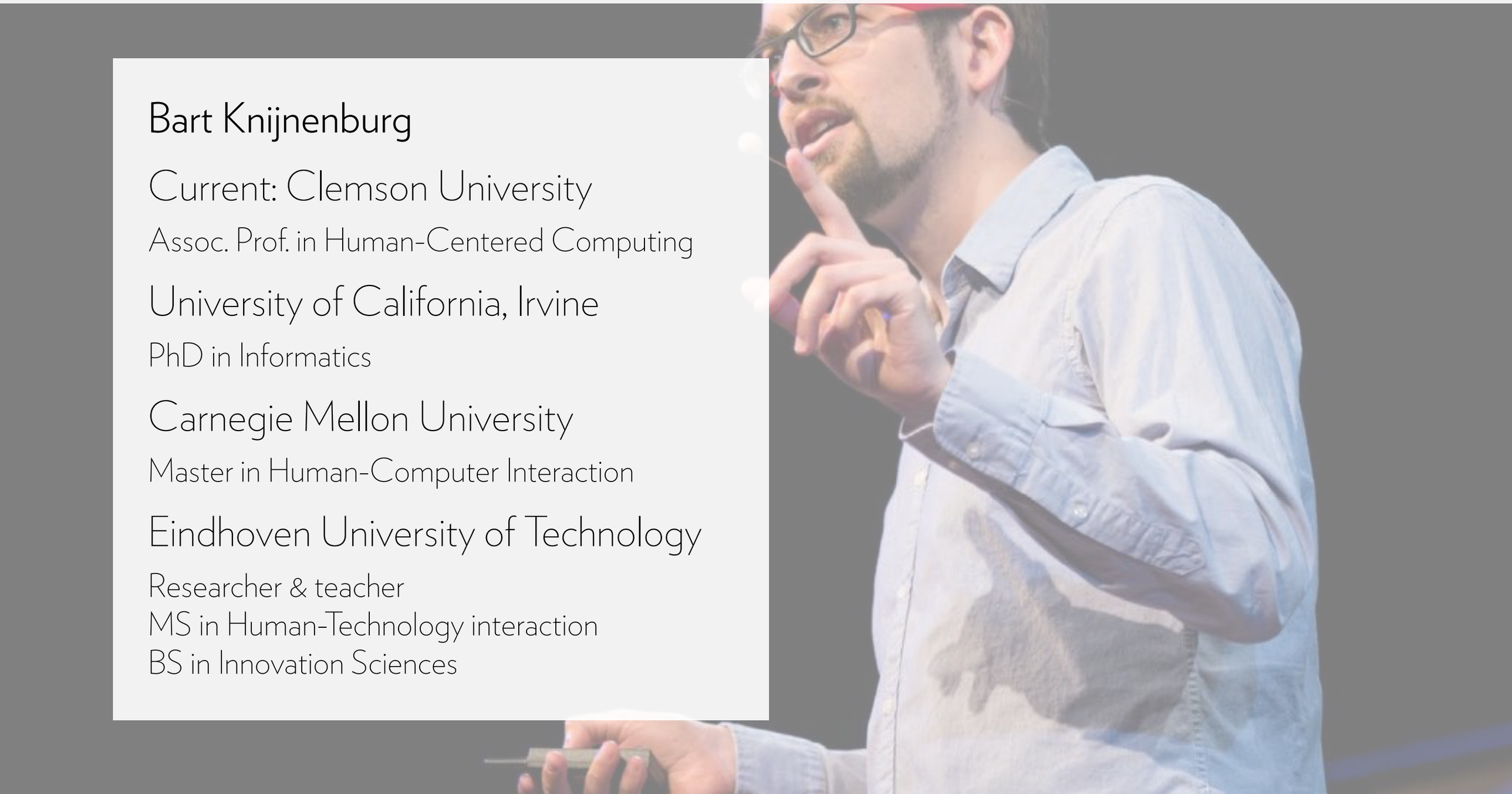
Intro and motivation

Adaptive Decision Support Systems

Introduction



Bart Knijnenburg

Current: Clemson University

Assoc. Prof. in Human-Centered Computing

University of California, Irvine

PhD in Informatics

Carnegie Mellon University

Master in Human-Computer Interaction

Eindhoven University of Technology

Researcher & teacher
MS in Human-Technology interaction
BS in Innovation Sciences

Introduction

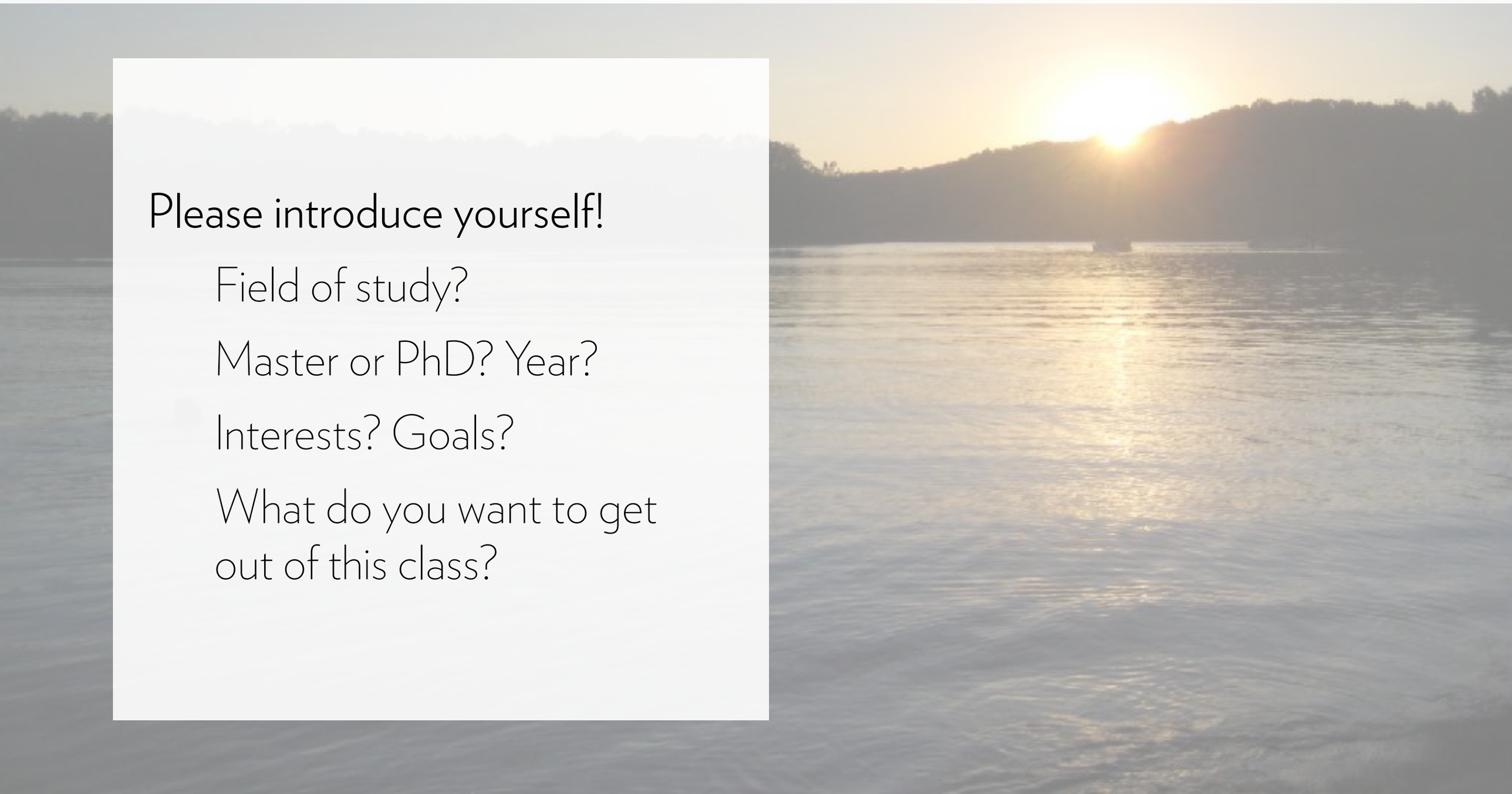
Hobbies:

- Running
- Photography
- Design
- Cycling (more of a lifestyle)

Also: taking care of Tolga!

- My 3-year old kid

So who are you?



Please introduce yourself!

- Field of study?
- Master or PhD? Year?
- Interests? Goals?
- What do you want to get out of this class?

Why “ADSS”?

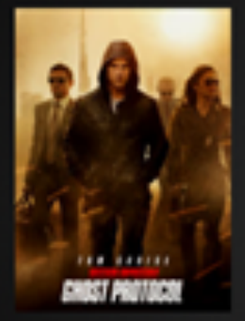
What are “adaptive decision support systems” and why should I study them?

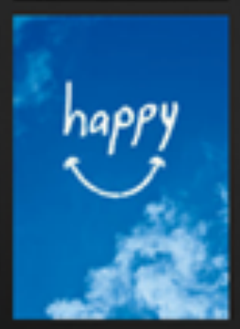
Why “ADSS”?


Scoop Away
Fresh Step
TIDY CATS
Multi-Cat
Easy Rinse
DeliCat
20% MORE

NETFLIX

Top 10 for Melissa



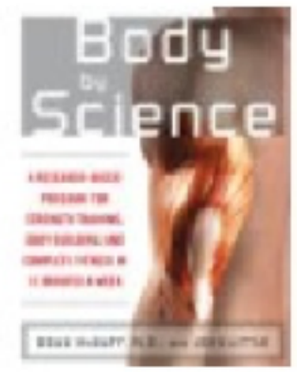


Amazon.com: Why is this recommended

amazon.com https://www.amazon.com/gp/yourstore/rate-this-asin/ref=pd_ys_qtk_genera

amazon.com

Recommended for You



Body by Science
Our Price: $9.99
Used & new from $9.99

See all buying options

Because you purchased...

The Black Swan: Second Edition: Th Impact of the Highly Improbable: W new section: "On Robustness and Fragility" (Kindle Edition)

“The algorithm accounts for only 5% of the commercial success of our recommender systems [...] The interactive components of a recommender account for about 50%”

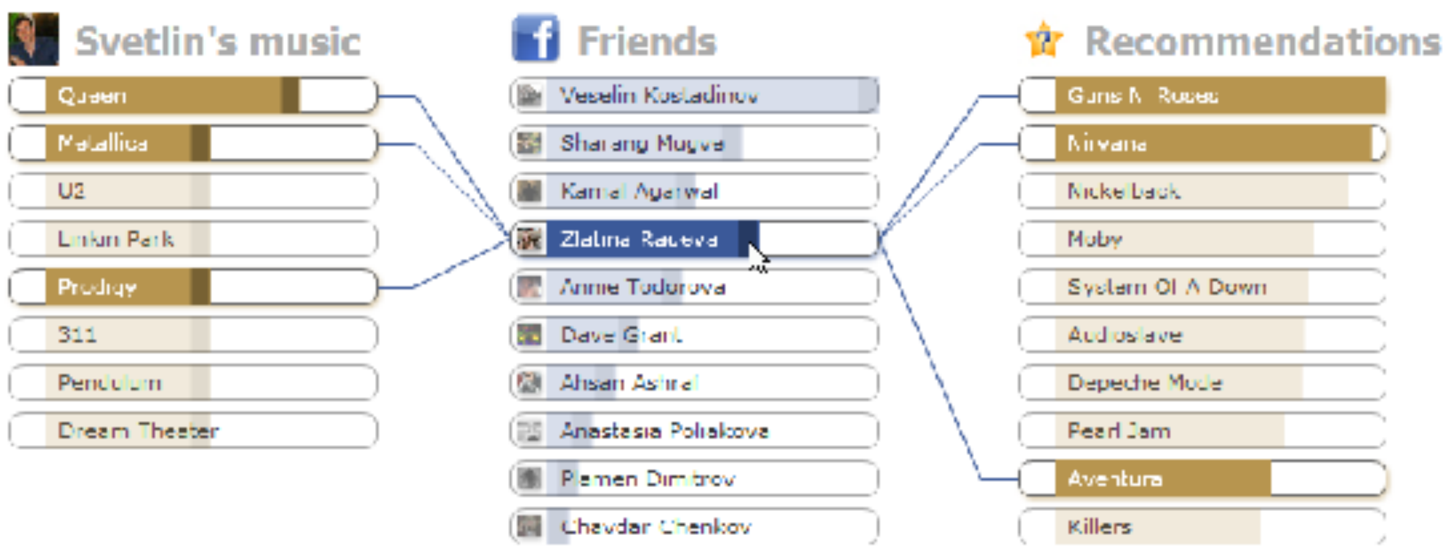

Being accurate
is not enough

Behaviorism
is not enough

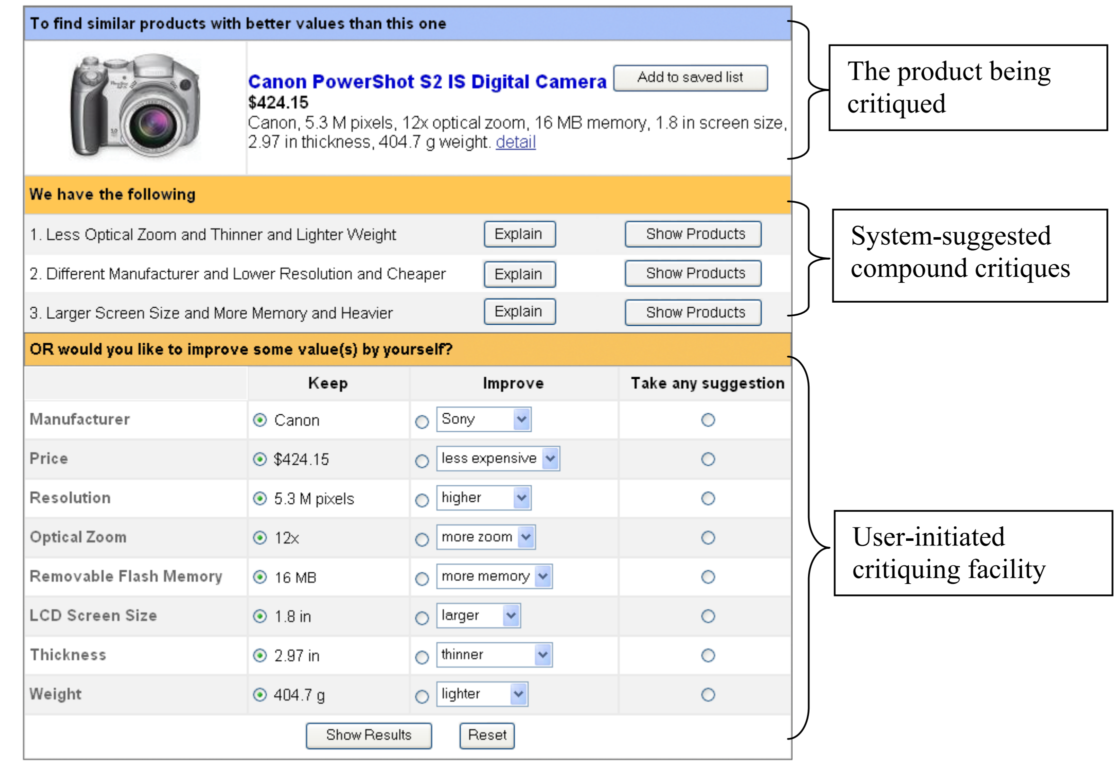



Rating
is not enough

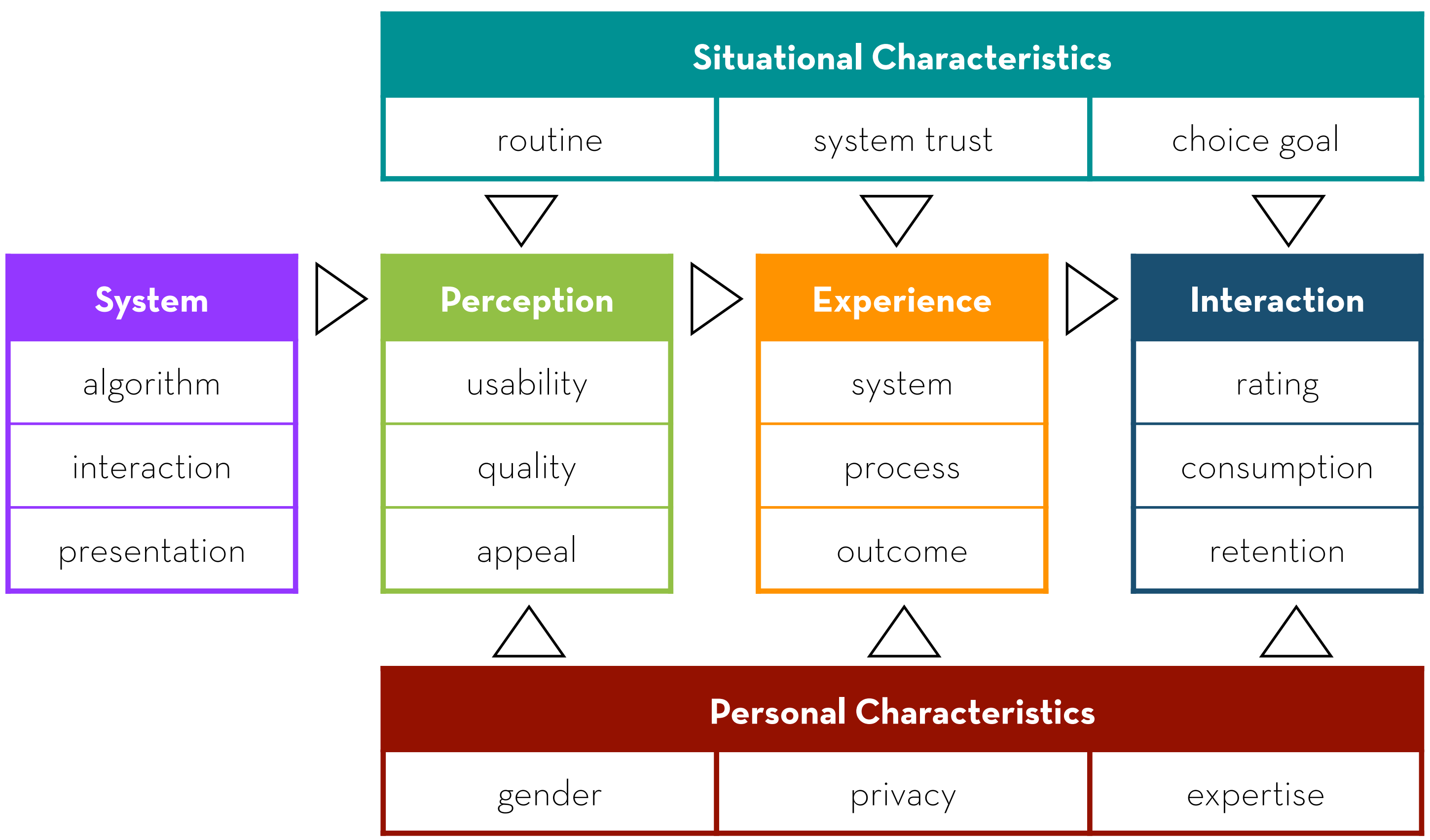
Enough is enough!

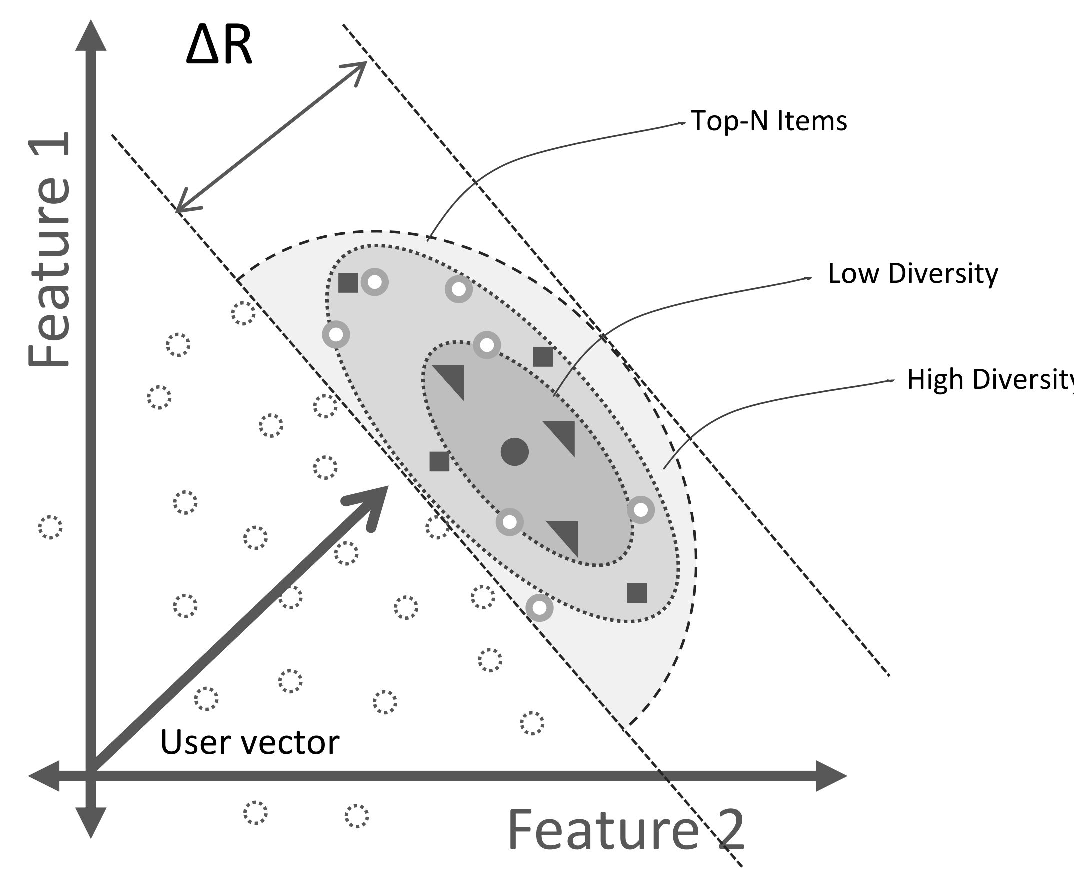
Svetlin's music
Friends
Recommendations
Queen
Metallica
U2
Prodigy
311
Dream Theater
Veselin Kostadinov
Zlatina Raceva
Anna Todorova
Dave Grant
Anastasia Poliakova
Plamen Dimitrov
Chavdar Chenkov
Guns N' Roses
Nirvana
Moby
System Of A Down
Depeche Mode
Pearl Jam
Aventura
Killers



To find similar products with better values than this one
Canon PowerShot S2 IS Digital Camera
Add to saved list
$424.15
Canon, 5.3 M pixels, 12x optical zoom, 16 MB memory, 1.8 in screen size, 2.97 in thickness, 404.7 g weight. detail
We have the following
1. Less Optical Zoom and Thinner and Lighter Weight
2. Different Manufacturer and Lower Resolution and Cheaper
3. Larger Screen Size and More Memory and Heavier
Explain
Show Products
OR would you like to improve some value(s) by yourself?
Keep
Improve
Take any suggestion
Manufacturer
Canon
Sony
Price
$424.15
less expensive
Resolution
5.3 M pixels
higher
Optical Zoom
12x
more zoom
Removable Flash Memory
16 MB
more memory
LCD Screen Size
1.8 in
larger
Thickness
2.97 in
thinner
Weight
404.7 g
lighter
Show Results
Reset
The product being critiqued
System-suggested compound critiques
User-initiated critiquing facility



Situational Characteristics
routine
system trust
choice goal
System
algorithm
interaction
presentation
Perception
usability
quality
appeal
Experience
system
process
outcome
Interaction
rating
consumption
retention
Personal Characteristics
gender
privacy
expertise



ΔR
Top-N Items
Low Diversity
High Diversity
Feature 1
Feature 2
User vector

msn ClipClub

Beta

Suche in ClipClub

SUCHE VIDEO CLIP

PERSÖNLICH EMPFOHLEN

MEIST GESEHEN

GESEHEN VON FREUNDEN

BESTE BEWERTUNG

AKTUELL

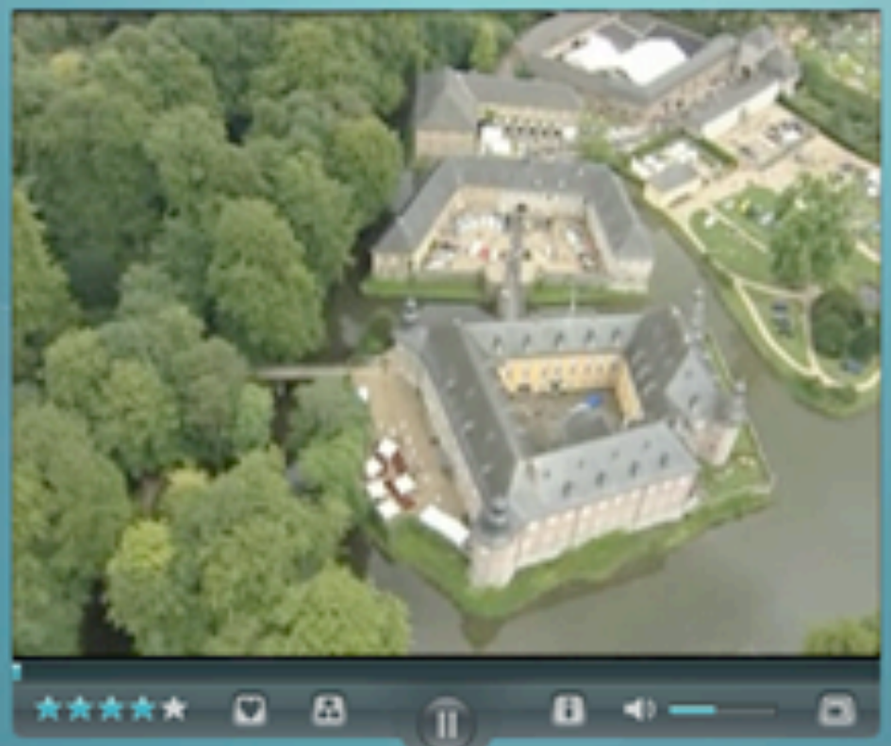
GENRE

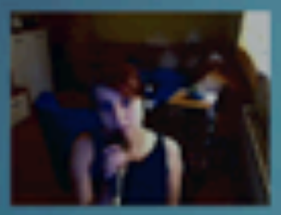
START

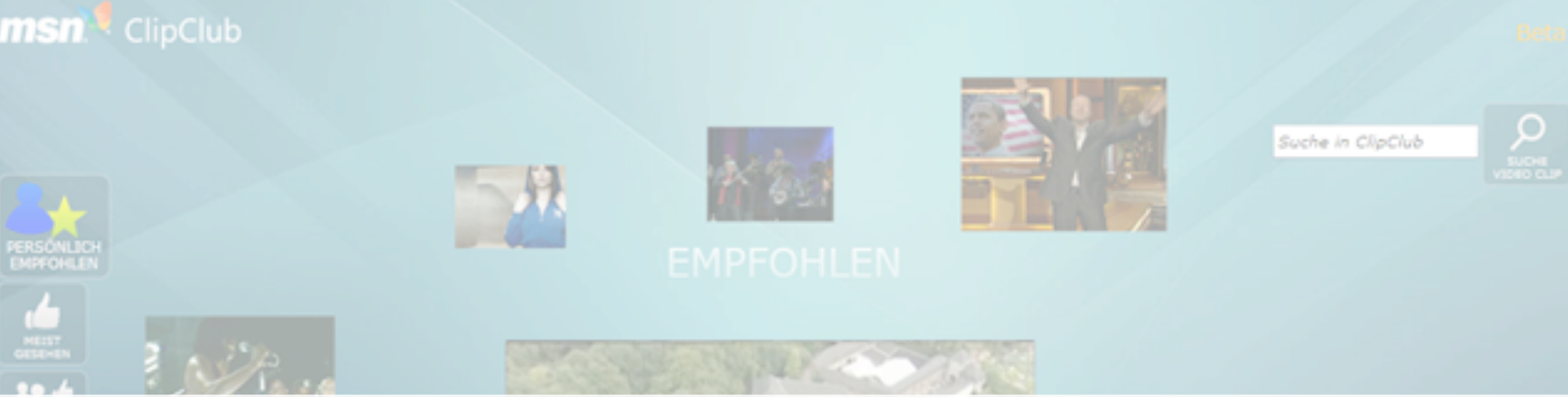
VOLLBILD

ZURÜCK

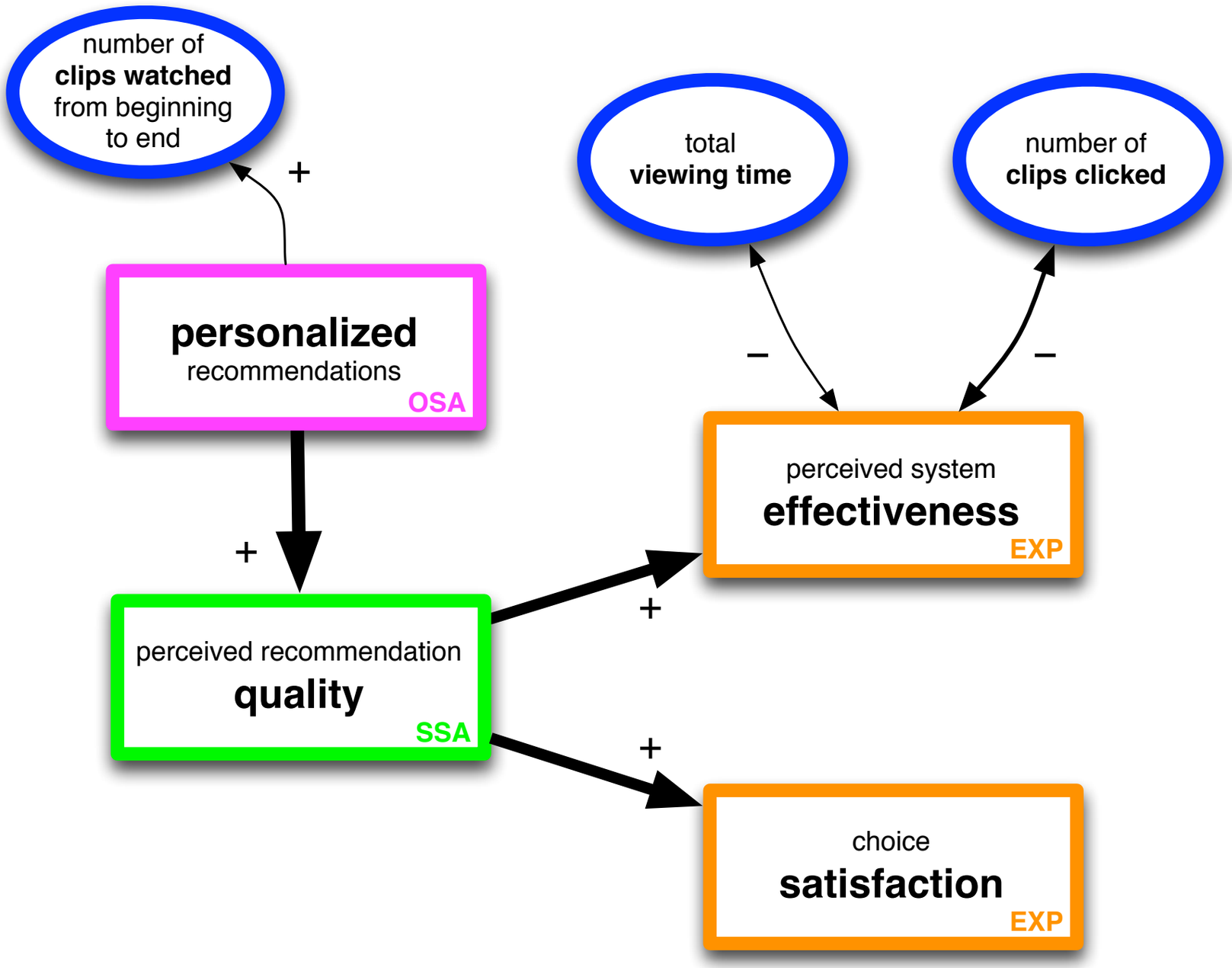
EMPFOHLEN



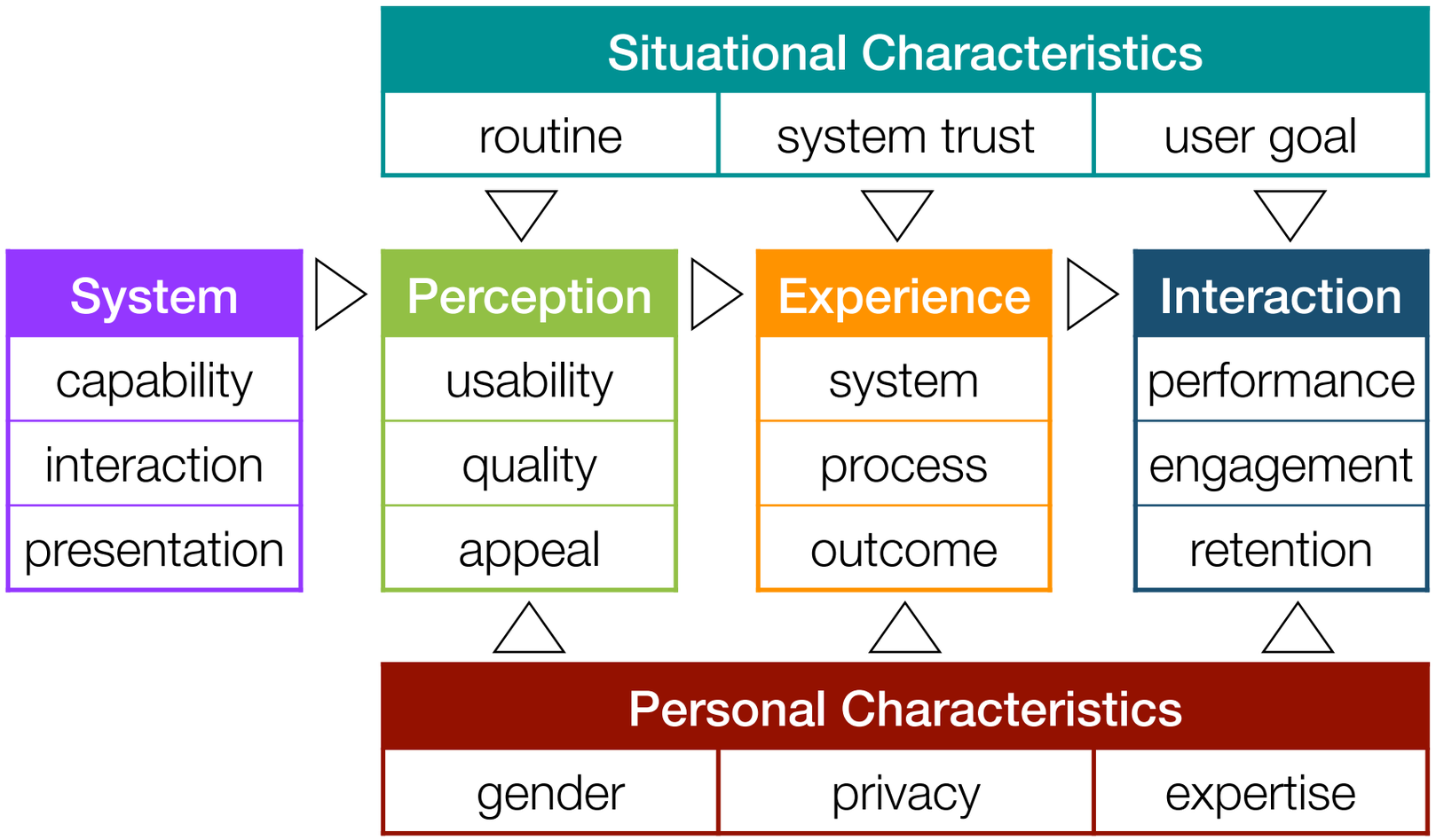




"Testing the recommender against the random videoclip system, the number of clicked clips and total viewing time went down!"



Knijnenburg et al.: "Receiving Recommendations and Providing Feedback", EC-Web 2010



Knijnenburg et al.: "Explaining the user experience of recommender systems", UMUAI 2012

Knijnenburg and Willemsen: "Evaluating recommender systems with user experiments", Recommender Systems Handbook 2016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NETFLIX
YOU
YAHOO NEWS
WASHINGTON POST
GOOGLE
FLIPBOARD

Beware of the Bubble

Filter bubbles are the new

How I Learned to Stop Worrying and Love the Bubble

Braaains

“Is [the recommender] providing recommendations that help the user achieve the goals they have for their life, or is it reinforcing behavior that detracts from those goals?”

Why this course?

What is this course about and why are you teaching it?

Why this course?

Our goal: With the help of recommender systems technology, design, implement* and evaluate systems that:

support rather than replace decision-making

attempt to cover users' tastes, plural

focus on exploration and preference development rather than consumption

Why this course?

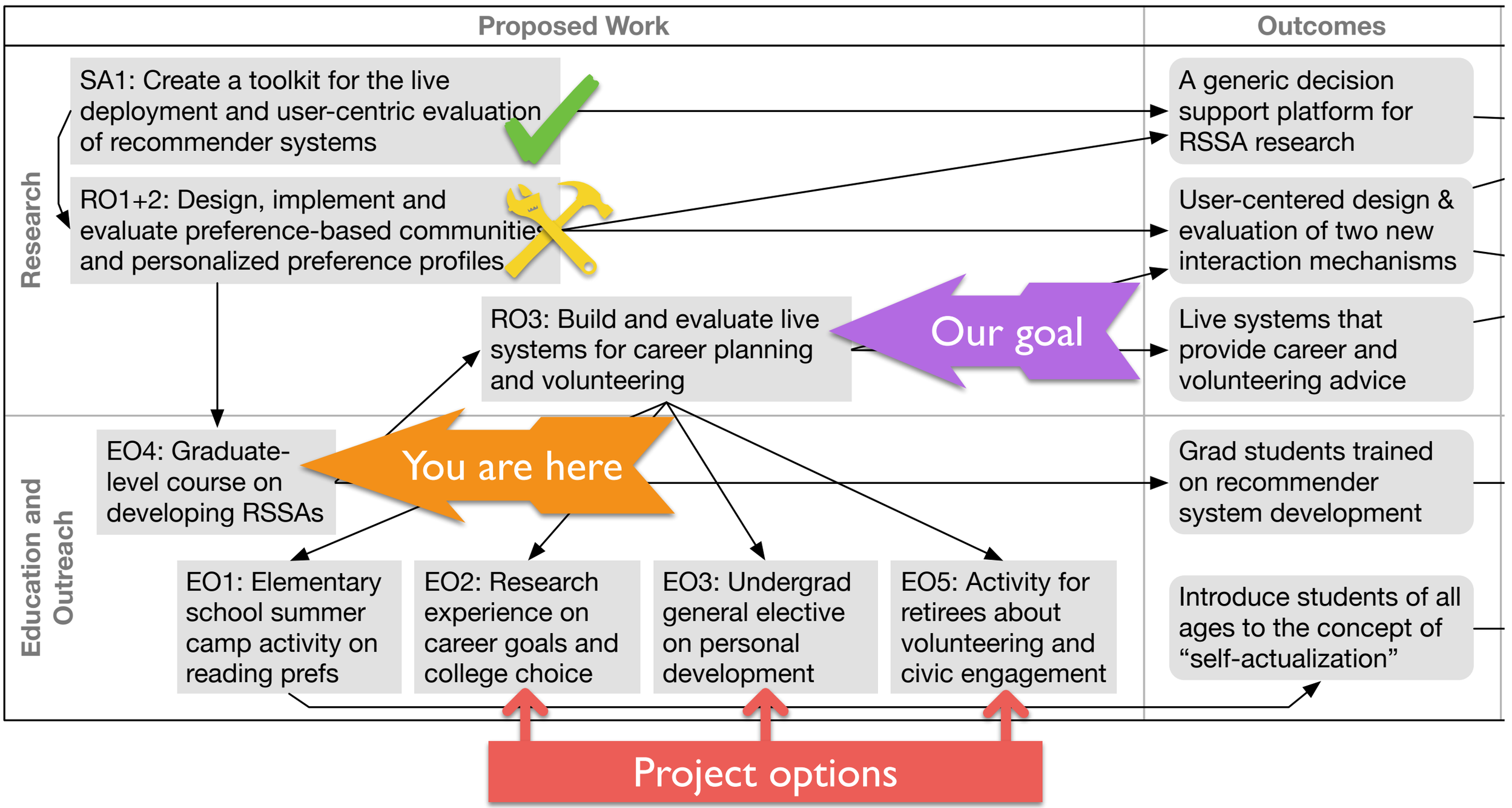
I presented this idea to the NSF as part of my CAREER proposal

They liked it so much that they funded it!

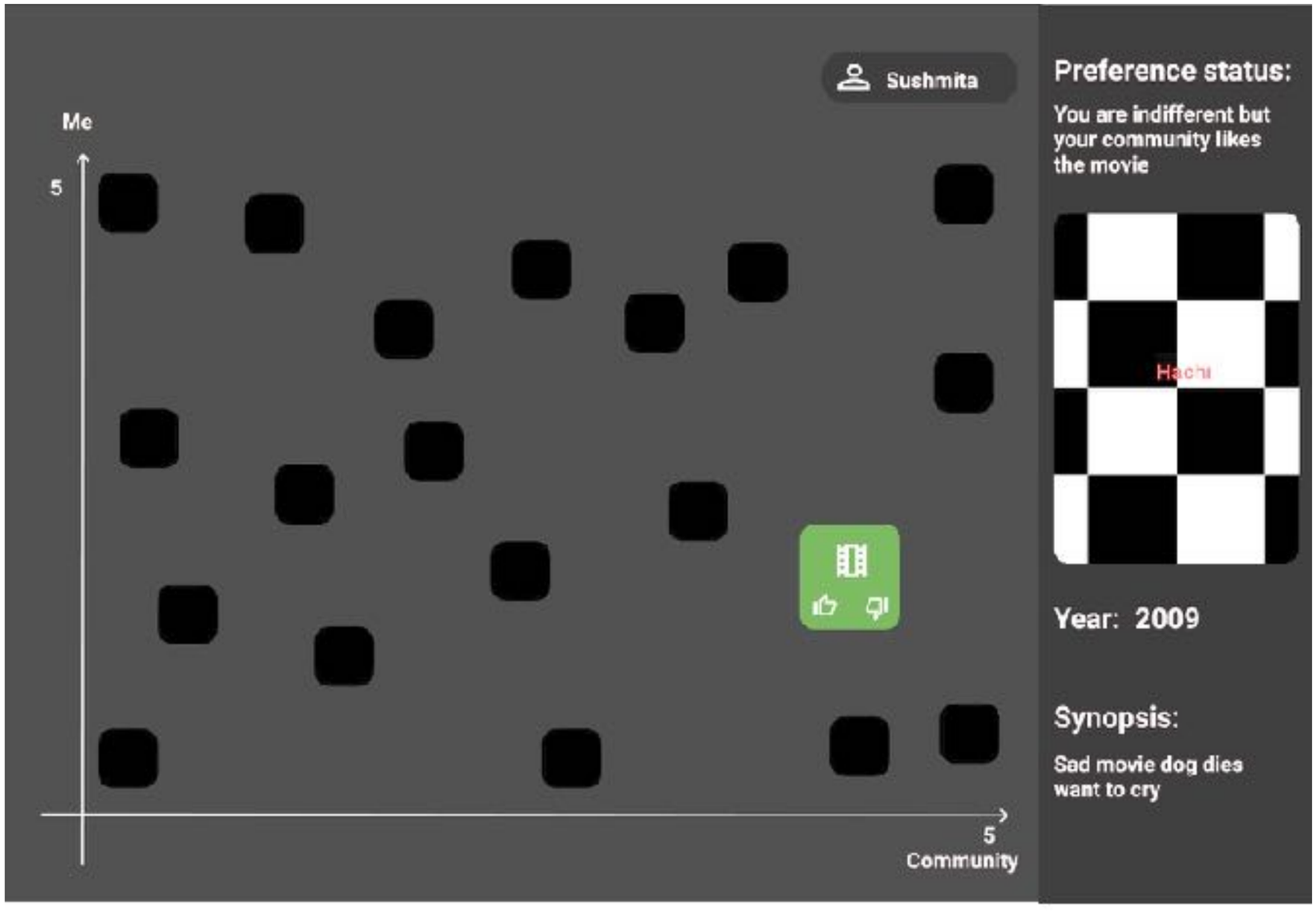
(after 3 tries 😀)

The CAREER project consists of research activities and education and outreach activities...

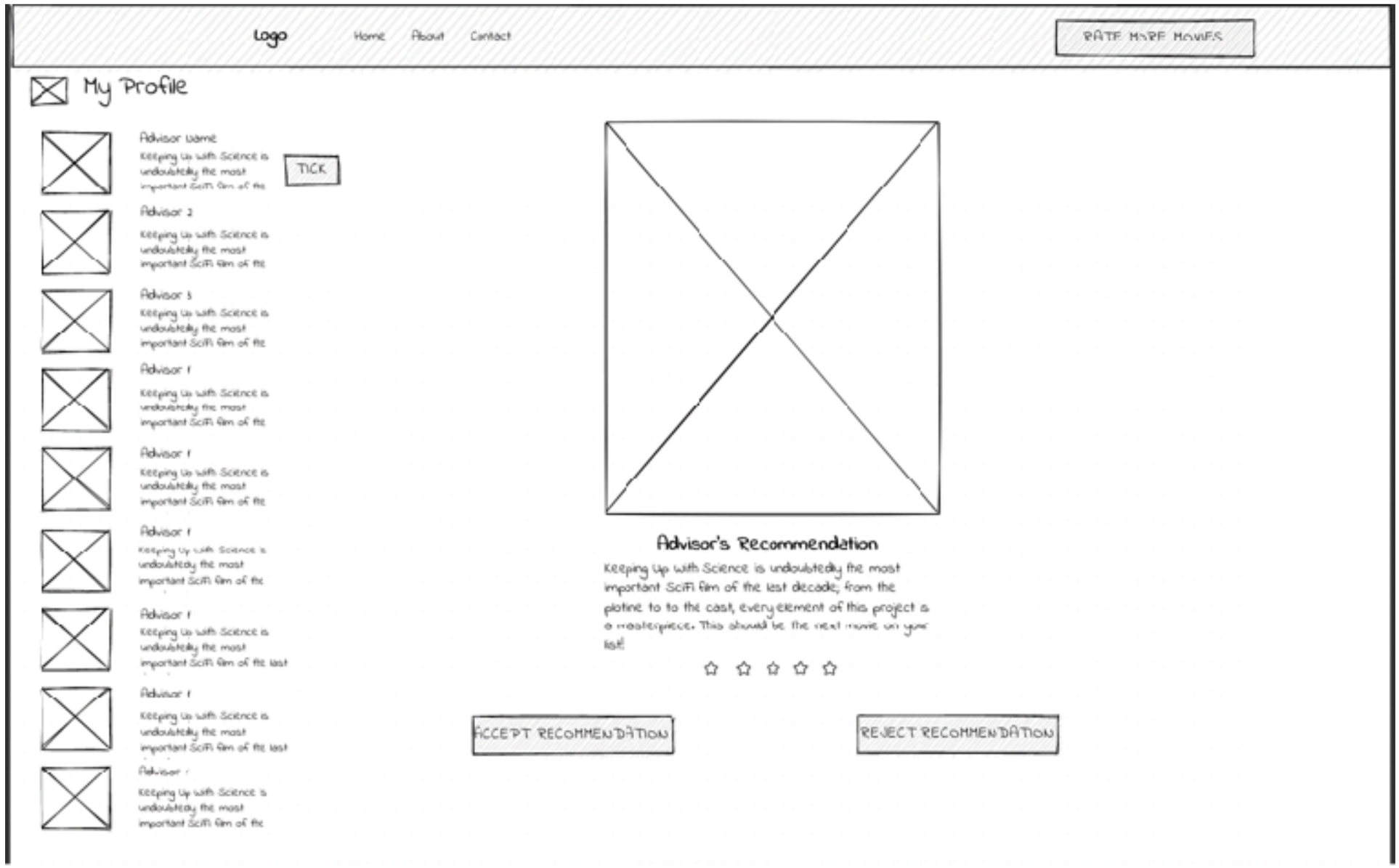
Why this course?



Profiles


Sushmita
Me
5
5
Community
Preference status:
You are indifferent but your community likes the movie
Hachi
Year: 2009
Synopsis:
Sad movie dog dies want to cry

Communities



Career planning

High school / college students will:

complete the O*NET Interest Profile

complete Clemson's Core Competencies survey

...and then use the developed tools to:

visually explore their interests and competences (personalized preference profiles)

discuss their career goals (and college applications) with similar others (preference-based communities).

Volunteering

College students / retirees will:

complete the Volunteer Functions Inventory scale

...and then use the developed tools to:

explore volunteering opportunities (personalized preference profiles)

discuss and coordinate volunteering activities (preference-based communities)

Course structure

What are we going to do in this course?

Course structure

Syllabus/schedule and readings at www.usabart.nl/ADSS

You can put the schedule on your calendar with 1 click!

Canvas for everything else

Make sure you get the announcements in your email!

Course structure

Introduction (weeks 1-5):

Introduction to recommender systems and algorithms (lots of videos to watch)

User-centric aspects of recommender systems (lots of papers to read)

Goal: introduce the paradigm of “recommender systems for self-actualization”

Course structure

Development (weeks 2-4 and 4-6):

The TA will give hands-on tutorials in the use of our live recommender system toolkit

Introduction to the Lenskit back-end (Python) and our custom front-end (node.js + React)

Goal: modify our recommender with an “interesting change” (assignment 1)

Course structure

Mechanisms and user research (weeks 6+7 and 7-9):

Introduction to “personalized preference profiles” and “preference-based communities”

Teach methods for grounded user research

Goal: work with your team to conduct user research on your chosen user group and choice domain (assignment 2)

Course structure

Design (weeks 9-12):

Interpret your user research to design a “solution”

Goal: Work with your team to come up with (assignment 3):

A new system, implementing an existing interaction mechanism, that is designed to *specifically* support the target user group in the specified choice domain **OR**

A new interaction mechanism that provides generic decision support, but is *especially* suitable to support the selected user group in the specified choice domain

Course structure

User-centric evaluation (weeks 8-12 and 13-16):

Introduction to controlled user experiments

Introduction to think-aloud usability testing

Goal: depends on your design:

If you designed a system, your team will conduct a think-aloud study (assignment 4A)

If you designed an interaction mechanism, your team will design a controlled experiment (assignment 4B)

Course structure

User-centric readings (weeks 9-15):

Lectures on preference elicitation and expertise, choice overload and diversification, inspectability and control, alternative algorithms, emotions, and privacy

Goal: Get a broader understanding of some of the existing user-centric recommender systems research

> Note: For these + some of the initial readings you will submit a short reading reflection

Course structure

Final: term paper:

You will write up your user research, design, and think aloud / user experiment design in a term paper

Must include an introduction motivating the work, a background section with related work, a methods and results section detailing the work, and a discussion and conclusion reflecting on your findings

Goal: Write a recommender systems research paper

Optional: submit your paper to a conference or workshop!

Tips

How can I succeed in this class?

Tips

Read the assigned readings *before* class

I assume that you have read them!

Keep the reading reflections simple

They are graded as [missing, fail, pass, pass+], where the latter is a bonus

There are 12 reflection opportunities, but you only have to submit 10 in total (you are allowed to miss 2 of them)

Tips

Group work: All group members should participate equally

- There will be a peer assessment quiz after each assignment
- If someone did less work, we may grade that person differently

Still, learning how to work effectively as a group is part of the learning objectives

- Making sure everyone does their work is your job, not mine!

Tips

Start assignments early

- Interviews and user tests take effort and planning, creating designs takes time
- The process is iterative so you cannot do it all at once

Truly collaborate

- Don’t just delegate tasks between group members
- Important parts of most assignments must be done together (up to 3 hrs/wk)
- Make sure you schedule (a) weekly meeting time(s)!

Tips

Make your group work fun

Start meetings with small talk, get to know each other!

No plagiarism!

Learn how to properly cite: http://bit.ly/citeproper

“Faking” an interview/test is considered plagiarism!

Submit an IRB if you want to publish your work

I can help with this

Before we adjourn

A few things to do before Monday

Before we adjourn

Fill out the “Knowledge and preference pre-test” on Canvas!

We will use your answers in the group formation process

Install the following tools/packages on your machine for the hands-on tutorial:

Python 3 (and a Python environment manager)

node.js v16

NPM v8

React v18

NVM, latest stable build (optional)

Questions…