

User Adaptive Intelligent Systems

Introduction

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Objectives

- Understand the importance of personalisation
- Familiarise with the nuances of personalisation

Why Do We Need Personalisation?

- **Available information**
 - Abundance
 - Heterogeneity
 - Noise
 - Constraints (bandwidth, time)
- **People**
 - Capabilities and background
 - Task, goal, intentions
 - Context
 - Affective states

Two Types of Personalisation

Adaptable (customisable) systems

User is able to modify aspects of System to suit his/her own preferences

Adaptive systems

 + machine intelligence!

S modifies its own behavior at least partly independently of specifications by U

Intermediate cases

S proposes possible adaptations, U decides which ones to accept
... still needs machine intelligence but less automation

Example: User-ADAPTABLE Interface

Customise
your web
browser

my.yahoo.com

Yahoo! - Microsoft Internet Explorer

View Favorites Tools Help

Search Favorites Media

http://my.yahoo.com/index.html

nyyahoo Search Web 35 blocked AutoFill Options myyahoo

My YAHOO! Welcome, George!
[Sign Out, Account Info]

New Page

Colours Choose Content Change Layout Add/Delete Pages

Weather Edit X

London, UK 0...2 C

Paris -1...2 C

click on city for extended forecast

Calendar Edit X

January 2005

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Lead Photo 23 Jan 3:53PM

SNOW IN WASHINGTON
A Washingtonian uses cross-country skis as snow

New Page Headlines 23 Jan 3:53PM

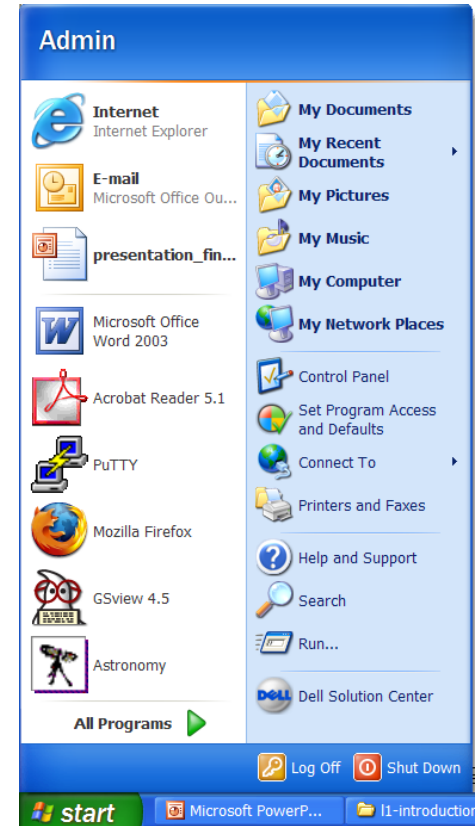
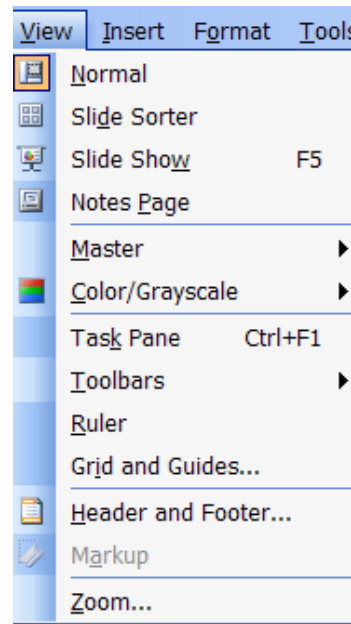
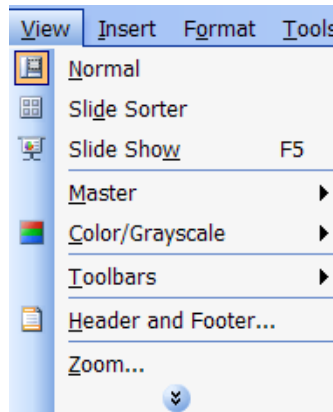
UK and Ireland: Top Stories

- Tories plan immigration curbs
- Zarqawi declares "bitter war" on election

Example: User-ADAPTIVE Interface

Smart
menus

MS Windows





Familiarise with Recent Examples

- Travel assistant MoCoMapps (IBM)
- Personalised E-Coach (University of Michigan)

Watch the videos on Minerva to familiarise with these systems

MoCoMapps: Geo-crowdsourced personalised travel app (IBM)

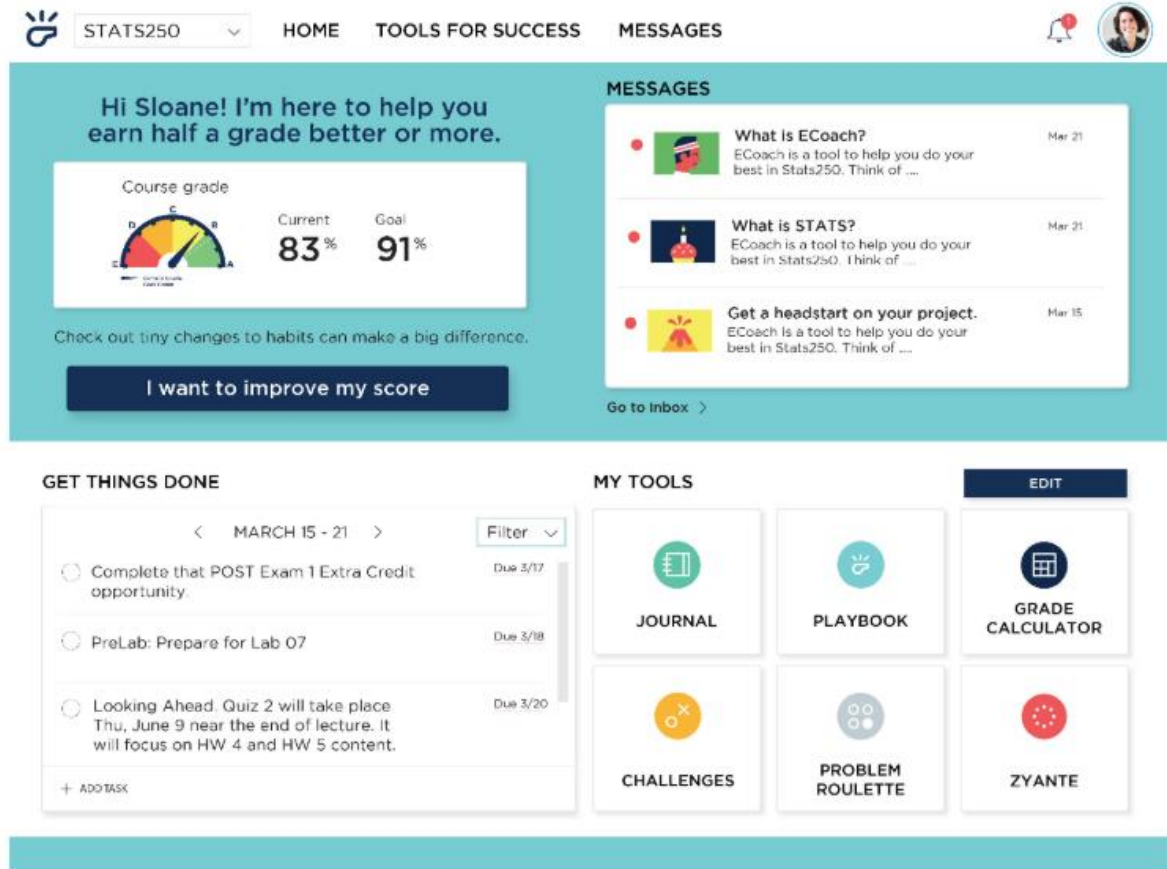
- Customisable interface for indicating user interests
- Registering notable points (e.g. bike racks)
- Presents a location map adapted to the user's interests



Watch the video about MoCoMapps (available from Minerva)

ECoach: Personalised Coach for University Students (Univ of Michigan)

- Customisable interface for indicating the learner's goals and personal values
- Psychometric test to identify the learner's self-regulation and motivation for studies
- Link to the university student information system
- Adaptive reminders & feedback
- Recommendation for learning and wellbeing activities



The screenshot shows the ECoach interface for a student named Sloane. The top navigation bar includes a logo, a dropdown menu set to 'STATS250', and links for 'HOME', 'TOOLS FOR SUCCESS', and 'MESSAGES'. A user profile picture is visible in the top right corner.

The main content area is divided into two columns. The left column features a greeting: 'Hi Sloane! I'm here to help you earn half a grade better or more.' Below this is a 'Course grade' section with a circular progress indicator showing a current grade of 83% and a goal of 91%. A message states: 'Check out tiny changes to habits can make a big difference.' A button at the bottom of this section reads 'I want to improve my score'.

The right column is titled 'MESSAGES' and contains three message cards:

- 'What is ECoach?' dated Mar 21, explaining that ECoach is a tool to help students do their best in Stats250.
- 'What is STATS?' dated Mar 21, explaining that ECoach is a tool to help students do their best in Stats250.
- 'Get a headstart on your project.' dated Mar 15, explaining that ECoach is a tool to help students do their best in Stats250.

 A 'Go to Inbox >' link is located at the bottom of the messages section.

Below the main content area, there are two sections:

- 'GET THINGS DONE' which displays a list of tasks with due dates: 'Complete that POST Exam 1 Extra Credit opportunity' (Due 3/17), 'PreLab: Prepare for Lab 07' (Due 3/18), and 'Looking Ahead. Quiz 2 will take place Thu, June 9 near the end of lecture. It will focus on HW 4 and HW 5 content.' (Due 3/20). A '+ ADD TASK' button is at the bottom.
- 'MY TOOLS' which contains a grid of tool icons: 'JOURNAL', 'PLAYBOOK', 'GRADE CALCULATOR', 'CHALLENGES', 'PROBLEM ROULETTE', and 'ZYANTE'. An 'EDIT' button is located at the top right of this section.

Read the ECoach blog and listen to the podcast (from Minerva)

Examples you have Come Across

- What is known about the ‘user’
- What is being adapted?
- Whose intelligence – machine or human or both?

Check examples from other students on Padlet:
<https://universityofleeds.padlet.org/vgdimitrova/6czsuplhjr qosvd>
Password: user-adaptive

Syllabus - 'Module Content' [Minerva]

- General Schema of User-adaptive Systems
- User Model Representation and Building
- Recommender Systems
- Adaptive Content Presentation
- Evaluation of User-adaptive Systems
- Responsible Personalisation

- Emerging topics

Supporting Resources

- **Reading & Exercises**
 - Papers available in Minerva
 - Exercises / questions embedded in lectures (follow-through again in self study time)
- **Minerva**
 - Lecture notes; reading materials
- **External sources:**
 - **User Modelling Inc.** (<http://www.um.org/>)
 - **Use Modelling and User-Adapted Interaction** journal (<http://www.umuai.org/>)
 - **User Modelling, Adaptation and Personalisation (UMAP)** conferences
 - **Recommender Systems (RecSys)** conferences

Expected Engagement

- attend weekly online lectures
(Tuesdays, 15:50-16:35 and 16:40-17:25)
- familiarise with material provided for each topic
- engage in discussions on module topics
- complete the formative assessment quizzes
- complete in course summative assessment
- prepare for the terminal assessment

Assessment

Assessment type	% of overall module assessment	Submission date (coursework)	Submission mechanism
Coursework 1 Recommender system prototype [report]	30%	17 Nov 2022	Gradescope
Coursework 2 Responsible personalisation [online test]	10%	8 Dec 2022	Gradescope
Terminal assessment	60%		In person

Summary

- Personalisation is ubiquitous nowadays
- Two main drivers:
 - Information
 - People
- Two types of personalisation:
 - User-adaptable systems (customisation)
 - User-adaptive systems (machine intelligence)