Foxtrot recommender system
Demonstration

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Foxtrot recommender system
Demonstration

- Problem domain
- Ontological user profiles
- Foxtrot approach
- Demonstration
- Future work
• Problem domain

Information overload on the WWW
  Too many sites and pages to browse
  Search engines need an explicit search query

Recommender systems
  No need to specify explicit keywords
  Learns the type of things you want
  Automatically looks for them
  Recommends relevant things when they are found

A real world problem domain
  On-line research paper recommendation for researchers
  University of Southampton staff and students
• **Ontological user profiles**

User profiles represented using an ontology
  Classes represent research topics
  Ontology contains is-a relationships between classes
  User profiles hold classes and current interest values
Training set for each class
  5-10 labelled examples per class
  Examples shared between users
Profile inference
  Is-a relationships used to infer interests not seen directly
  Inference used to improve profile accuracy
Profile feedback
  Profile visualization allows profile feedback
  Feedback used to improve profile accuracy
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Demonstration

- Foxtrot approach

World-Wide Web

Researchers

Web Proxy

Research paper database

Profiler

Recommender

Classifier

• Foxtrot approach
**Foxtrot recommender system**

**Demonstration**

- **Foxtrot approach**
  
  Unobtrusive monitoring
  
  Web proxy used to monitor web browsing

  Shared research paper database
  
  Database grows as users browse the internet

  **Classifier**
  
  Boosted k-Nearest Neighbour classifier

  **Profiler**
  
  Browsed papers and explicit feedback indicate interest
  
  Time-decay and inference used to find interests

  **Recommender**
  
  Pearson-r correlation finds similar people
  
  Recommended papers are those read by similar people
Recommendation page
Recommendations appear as search results when you open the web page.
Searching

Searches are made by entering a search query into the edit boxes.
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Searching

Now a search query has been entered, the search button can be clicked. This starts the search.
Searching

Once complete, the search results are displayed in the area below the search query. The recommendations are overwritten by the search result.
Feedback

Research papers can be opened by clicking on the green hyperlink.
Feedback
Research papers can be opened by clicking on the green hyperlink. PS, PDF, HTML and compressed versions are supported.
Feedback
Feedback on individual papers can be provided via the radio buttons next to a paper.
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Profile visualization
Profiles are visualized as a time/interest graph.
Profile visualization
Profiles are visualized as a time/interest graph. Classes can be turned on and off.
Profile visualization

Users can draw interest bars onto the graph to indicate interest.
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Profile visualization
Users can draw interest bars onto the graph to indicate interest.

<table>
<thead>
<tr>
<th>Profile operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic listbox</strong></td>
</tr>
<tr>
<td>Selects which topics are shown (graphs and bars). Topics are ranked in order of current interest.</td>
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<tr>
<td><strong>Drawing topic</strong></td>
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<tr>
<td>The menu button selects the current drawing topic. The crosshair cursor indicates drawing mode.</td>
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<tr>
<td><strong>Drawing interest bars</strong></td>
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<tr>
<td>Clicking and dragging the crosshair cursor draws a new interest bar. Topic interest bars teach Foxtrot which topics are of interest to you. If a bar extends to the left or right of the graph it represents pre-trial or future interest.</td>
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<tr>
<td><strong>Changing interest bars</strong></td>
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<tr>
<td>Clicking on a bar selects it and the delete key erases it. Topic interest bars can be moved by dragging the centre, or resized by dragging the ends.</td>
</tr>
</tbody>
</table>
Profile visualization

Users can draw interest bars onto the graph to indicate interest.
Profile visualization

Users can draw interest bars onto the graph to indicate interest. Once drawn, bars can be moved and re-sized as required. Continued interest goes off the end of the graph.
Future work

Improved ontology
  More relationships than just is-a links
  Projects, related areas, technology links…

Task profile
  Task profiles would allow more than just a general profile
  Task analysis is a hard problem however

Agent metaphor
  A multi-agent-system could buy/sell ontological knowledge
  Agents could trade personal information