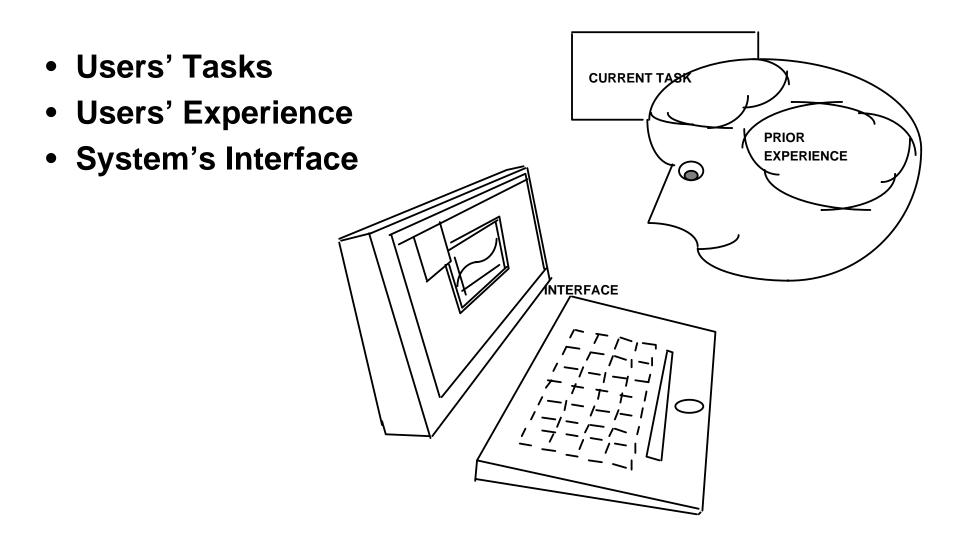
Cognitive Walkthrough

C. Wharton, J. Rieman, C. Lewis and P. Polson, The Cognitive Walkthrough Method: A Practitioner's Guide, in J. Nielsen and R. Mack (eds.), Usability Inspection Methods, John Wiley & Sons, Inc., New York, 1994, Ch. 5.

Information Processing Theory of Human-Computer Interaction



Functionality Isn't Enough

- For an interface to be a success, it must provide the right functionality, at the right time, in the right place, and in the right form from the user's point of view.
- Such interfaces are called usable.
- Example: if we are designing an ATM, we should be able to justify each user action:
 - Insert card?
 - Enter PIN?
 - Press Quick Cash key?
 - Press Okay?
 - Remove card?
 - Remove money?
 - Remove receipt?

Cognitive Walkthrough Overview

- The cognitive walkthrough is a way to test the usability of interactive software.
- The cognitive walkthrough focuses on
 - Task(s)
 - Interface
 - Learnability (one kind of usability)
- The cognitive walkthrough may be used
 - without "real" uses
 - before a system is implemented
 - with prototypes or mockups

Cognitive Walkthrough Procedure

- Define the inputs to the walkthrough.
- Convene the analysis.
- Walk through the action sequences for each task.
- Record critical information.
- Revise the interface to fix the problems.

Performing the Cognitive Walkthrough - Pt. 1

Define the inputs to the walkthrough.

- Identification of the users.
- Sample tasks for evaluation.
- Description (mockups) or implementation of the interface.
- Action sequences (scenarios) for completing the tasks.

Convene the walkthrough.

- The facilitator maintains the pace of the discussion.
- A scribe keeps two lists:
 - » problems (and suggested solutions)
 - » assumptions (about tasks and users' experience)
- The participates walk through (discuss) the tasks with respect to the interface (mockups) and action sequences (scenarios); they try to tell a credible story.

Performing the Cognitive Walkthrough - Pt. 2

- The participants walk through (discuss) the tasks with respect to the interface (mockups) and action sequences (scenarios); they try to tell a credible story.
 - What is the user trying to achieve at this point? (What's their "goal"?)
 Why is it their goal?
 - What actions are obviously available in the interface?
 - Does the label for the correct action match the user's goal?
 - If the user performs the correct action, will they get good feedback and not try to undo or redo the action?

Performing the Cognitive Walkthrough - Pt. 3

- Record critical information.
 - The credible success (or failure) story.
 - Assumptions (about tasks and users' experience).
 - Problems (and suggested solutions)
- Revise the interface to fix the problems.

Graduate School Example Getting Ready

Users

 We want the UCI Web pages to provide useful information to typical undergraduate students applying to graduate school in computer science.

Task

 The student wants to determine if a specialization in user interface construction is possible at the graduate level.

Interface (Mockups)

We have existing Web pages and Netscape Navigator 3.0.

Action Sequences (Scenarios)

- Choose "Academic Programs & Research"
- Choose "Department of Information and Computer Science"
- Choose "Research Areas in ICS"
- Choose "Software"
- Choose "User interface software"

Action: Choose "Academic Programs"

What's the user's goal, and why?

- The student wants to determine if a specialization in user interface construction is possible at the graduate level.
- This is one of the most common questions for applicants.

Is the action obviously available?

- There are two locations for the action, the image map and the plain text table.
- The action is readily available, being the second item.
- Users of Web browsers, esp. seniors in CS, should be familiar with image maps.

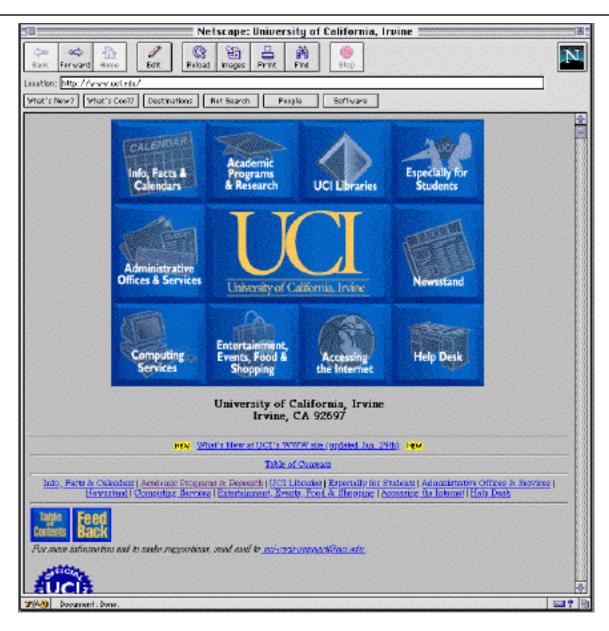
Does the action or label match the goal?

 "Academic Programs & Research" is a close match to the informal statement of the goal.

Is there good feedback?

- Besides Netscape's progress bar, the next page loads quickly.
- The new page's title (and content) clearly reiterates the selected action.

Screen before Action: Choose "Academic Programs"



Action: Choose "Academic Programs"

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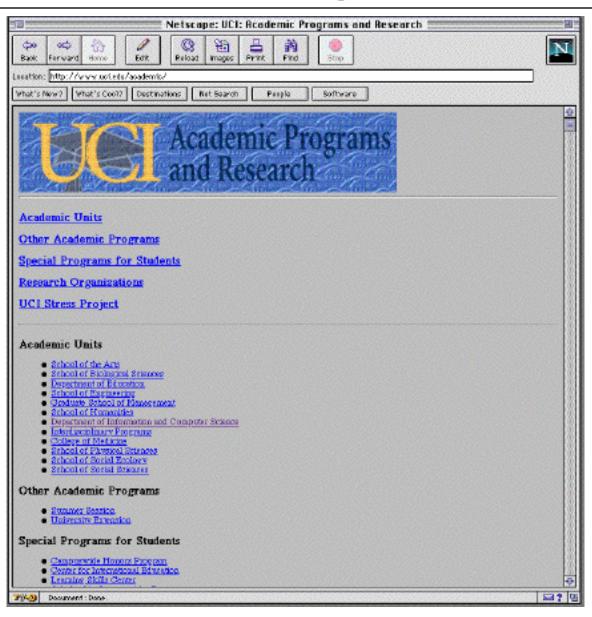
Does the action or label match the goal?

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- Besides Netscape's progress bar, the next page loads quickly.
- The new page's title (and content) clearly reiterates the selected action.

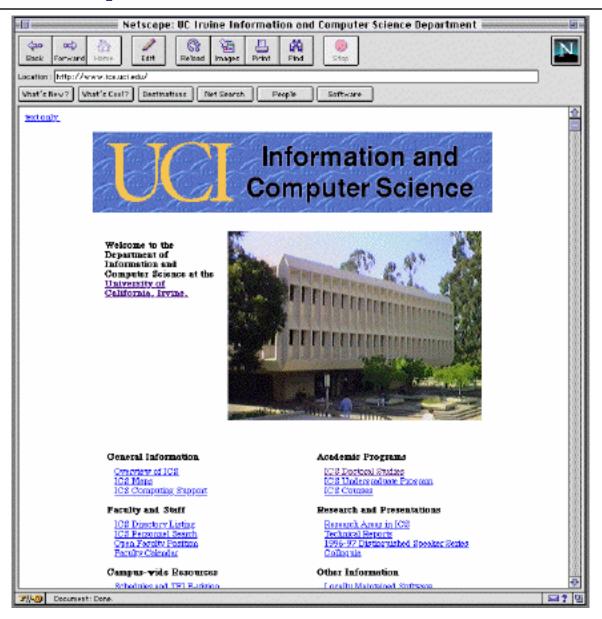
Screen after Action: Choose "Academic Programs"



Action: Choose "Department of Information ..."

- What's the user's goal, and why?
 - The student still wants to determine if a specialization in user interface construction is possible at the graduate level.
 - This goal was unsatisfied by the previous action.
- Is the action obviously available?
 - The action is visible in the viewable area; it's easy to find, about the 15th item on the page.
- Does the action or label match the goal?
 - "Department of Information and Computer Science" is a good match to the expected background of the student and to area of interest.
- Is there good feedback?
 - Besides Netscape's progress bar, the next page loads quickly.
 - The new page's title reiterates the selected action.

Screen after Action: Choose "Department of Information ..."



Action: Choose "Research Areas in ICS"

What's the user's goal, and why?

- The student still wants to determine if a specialization in user interface construction is possible at the graduate level.
- This goal was unsatisfied by the previous action.

Is the action obviously available?

- The action is visible but is not easy to find
 - » about the 20th item on the page
 - » is a subitem in the 4th category seemingly minor

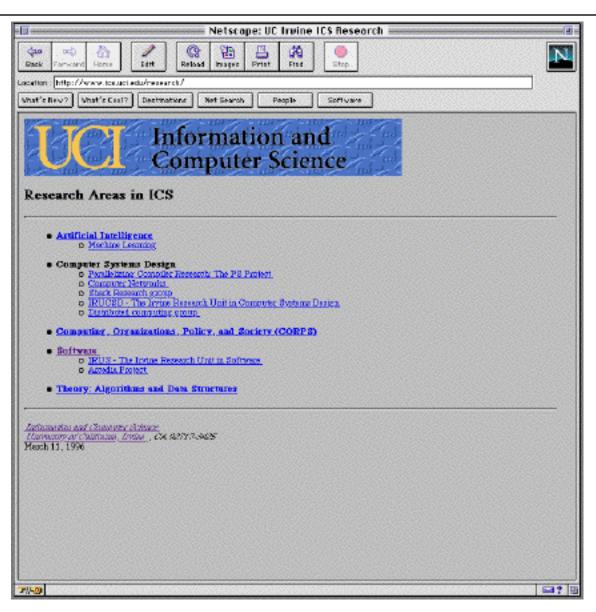
Does the action or label match the goal?

- "Research Areas" is a reasonable match to the goal of the student.
- However, there are 3 or more alternatives which appear earlier in the page, seemingly more important.

Is there good feedback?

- Besides Netscape's progress bar, the next page loads quickly.
- However, the new page's title does not immediately reflect the action.

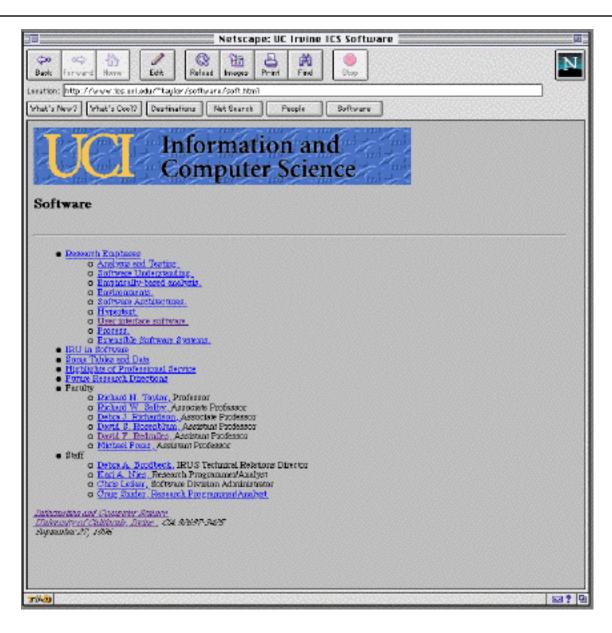
Screen after Action: Choose "Research Areas in ICS"



Action: Choose "Software"

- What's the user's goal, and why? (no change)
- Is the action obviously available?
 - The action is visible.
 - However, the user may not realize to choose it because the outline as a whole does not imply that area titles provide subarea information.
- Does the action or label match the goal?
 - "Software" is a good match to the area of user interface construction.
 - However, there are no immediate subareas within software that match exactly.
 As this is the 4th screen the student has read, he or she may give up soon! It may be easily the 13th or higher screen if earlier alternatives had been explored.
- Is there good feedback?
 - Besides Netscape's progress bar, the next page loads quickly.
 - However, the new page's title does not immediately reflect the action.

Screen after Action: Choose "Software"



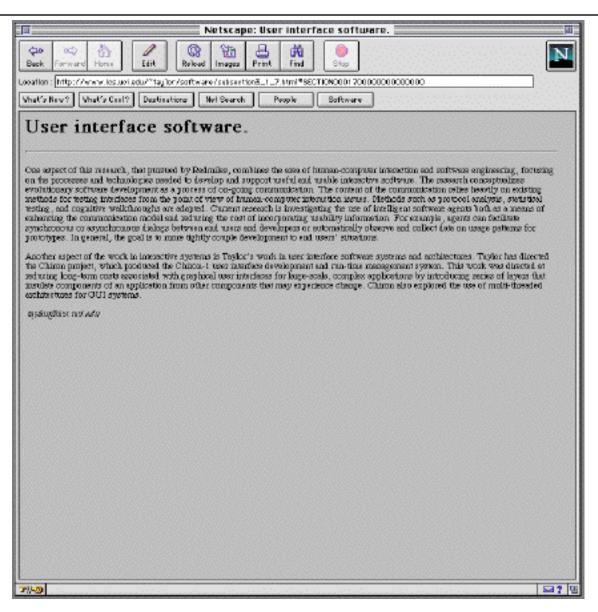
Action: Choose "User interface software"

- What's the user's goal, and why? (no change)
- Is the action obviously available?
 - The action is visible.
- Does the action or label match the goal?
 - "User interface software" is almost an exact match to the area of user interface construction.

Is there good feedback?

- Besides Netscape's progress bar, the next page loads quickly.
- The new page's title reflects the action.
- The page's contents reflects the satisfaction of the goal.

Screen after Action: Choose "User interface software"



Example Wrapup

- Action 1: Choose "Academic Programs ..."
 - is OK, label matches user's goal; new page provides excellent feedback.
- Action 2 Choose "Department of Information ..."
 - is OK.
- Action 3 Choose "Research Areas in ICS"
 - is a failure. There are at least 3 attractive alternatives that will lead users to different dead ends when they try to explore. Wording needs to be clarified. Priorities need to be reconsidered in the columnar layout. Title bar feedback from the title of the next page needs to be improved.
- Action 4 Choose "Software"
 - is probably OK. However, organization is not consistent across areas and feedback from the title on the next page needs to be improved.
- Action 5 Choose "User interface software"
 - is OK.

Graduate School Example

With 2006 Web Pages

And

"Quick and Dirty" Cognitive Walkthrough

Graduate School Example 2006 Getting Ready

Users

 We want the UCI Web pages to provide useful information to typical undergraduate students applying to graduate school in computer science.

Task

 The student wants to determine if a specialization in user interface construction is possible at the graduate level.

Interface (Mockups)

We have existing Web pages and Internet Explorer 6.0.

Action Sequences (Scenarios)

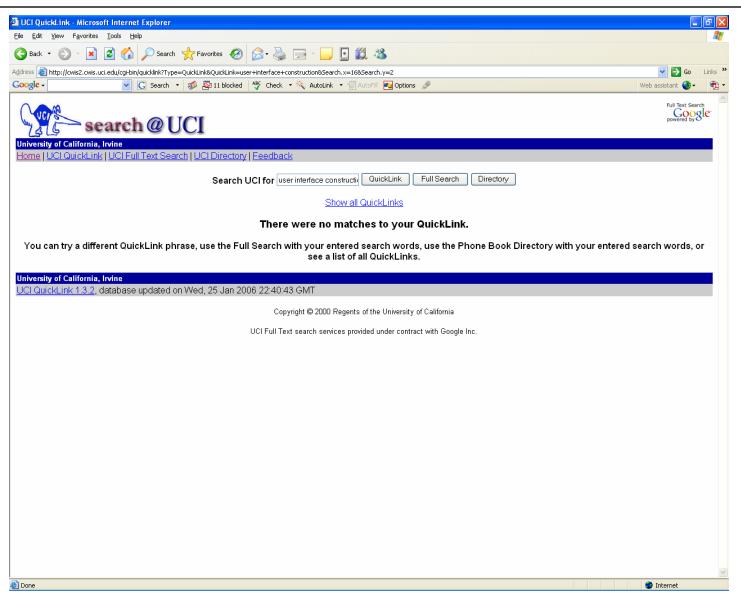
- Choose "Academic Programs & Research"
- Choose "Department of Information and Computer Science"
- Choose "Research Areas in ICS"
- Choose "Software"
- Choose "User interface software"

Exploring an "Intuitive" but Incorrect Action Sequence

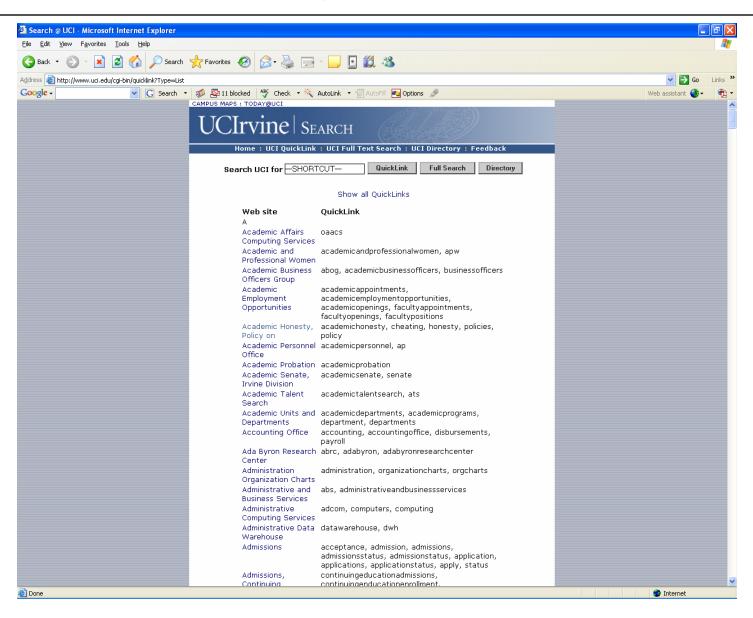
Before Any Action: UCI Home Page



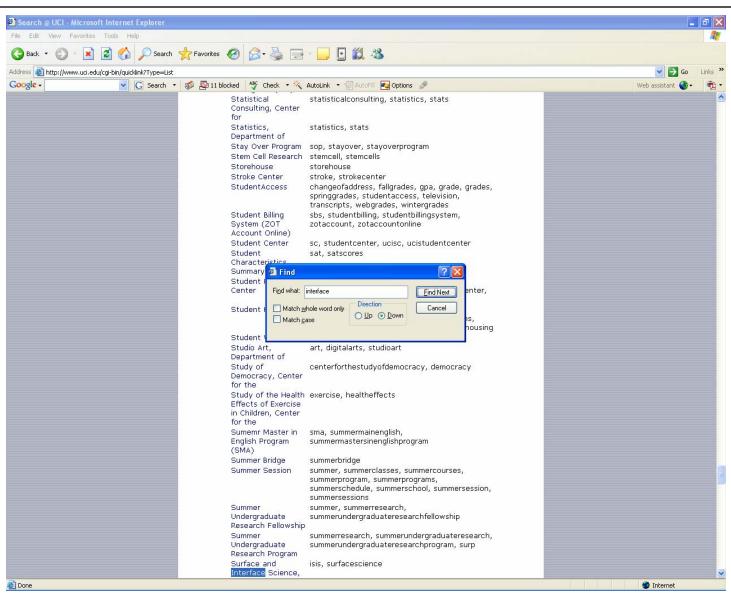
Screen After Action: Input Keywords and Select "Quick Search"



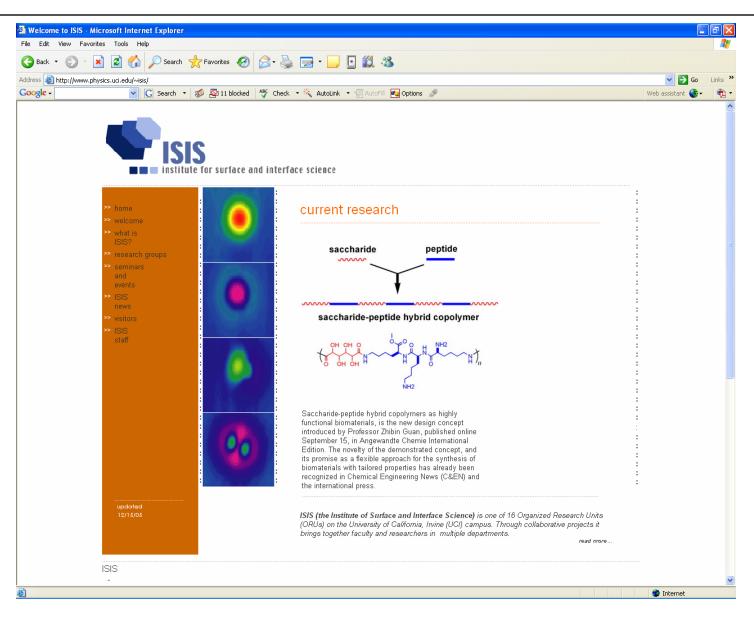
Screen After Action: Select "Show all QuickLinks"



Screen After Actions: ^F, type "interface", selected "Find Next"



Screen After Action: Selected "Interface Science"

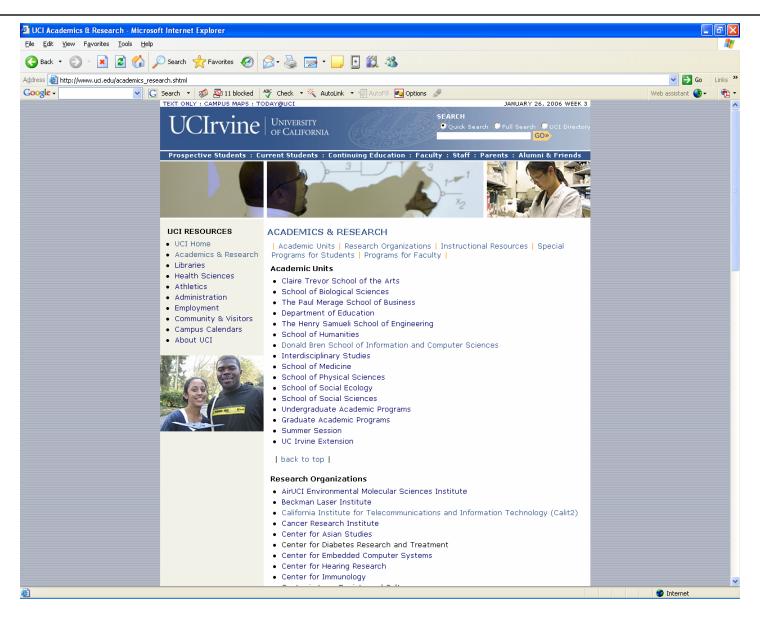


Exploring the Known Correct Action Sequence

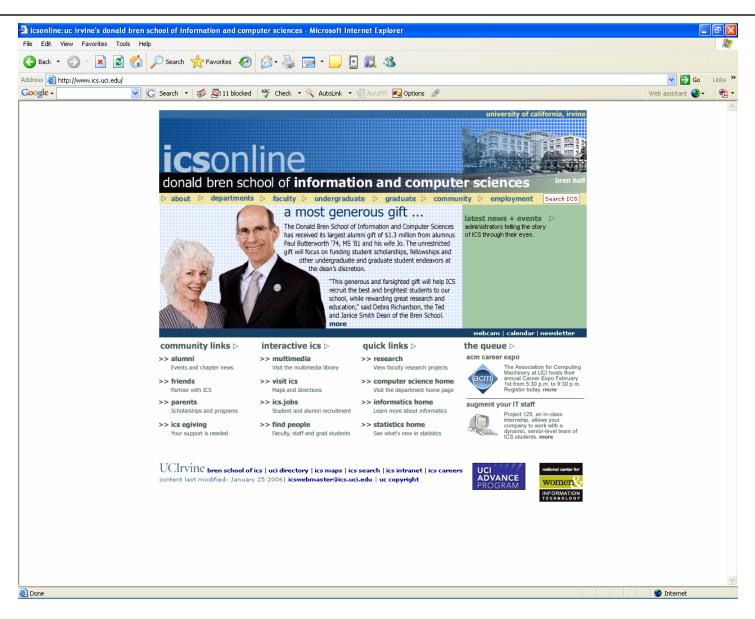
Before Any Action: UCI Home Page



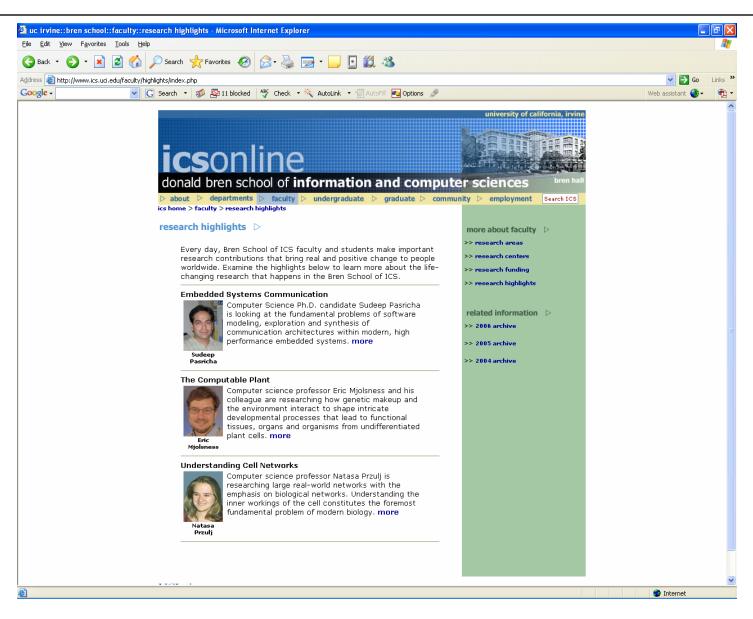
Screen After Action: Select "Academics & Research"



Screen After Action: Select "Donald Bren School of Information



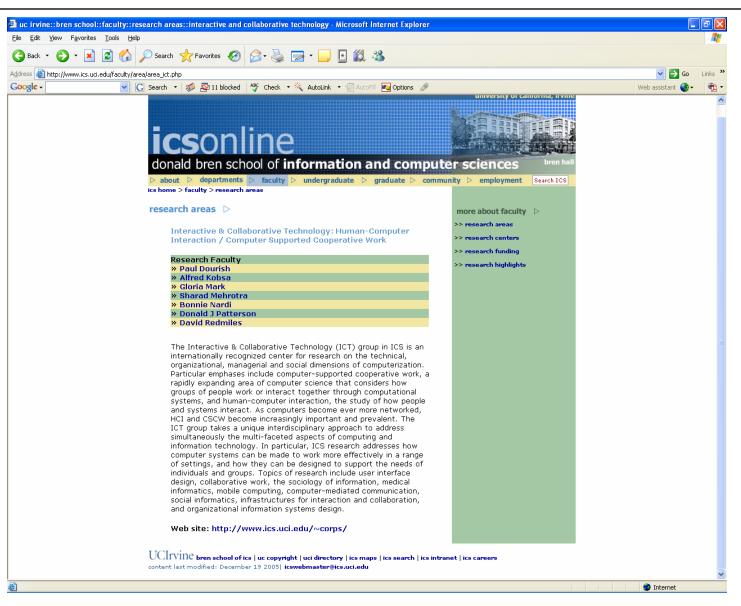
Screen After Action: Select "Research Areas"



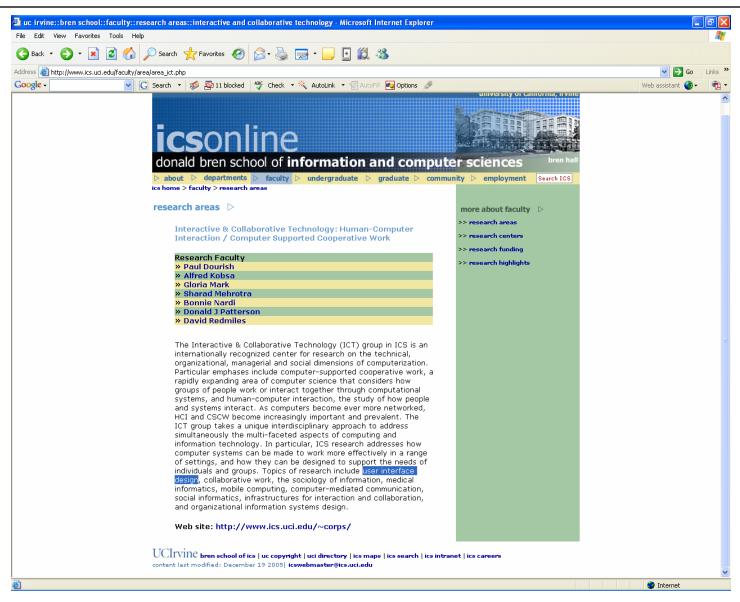
Screen After Action: Select "research areas"



Screen After Action: Select "Interactive & Collaborative Technology"



Screen After Action: Drag mouse to highlight phrase



Screen After Action: Select "http://www.ics.uci.edu/~corps/"

