Final Project

No screens

Prof. Lydia Chilton
COMS 4170
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Goal 1
Build websites that suit the needs and abilities of users

- Visual Information Display

Goal 2
When the needs and abilities of users are unclear, design systems by **learning from iteration** and experimentation.

- Idea
- Product
Users interact with a system to accomplish a goal

Buy a book

Set an alarm

Send an email
User Interfaces should be designed to help users accomplish a goal.

Guide users’ attention to important bits of information.

Interact with the system in ways that provide clear actions and feedback.

Allow users to navigate through the system in to meet their goal.
We have discussed concrete ways of thinking about goals

**Grand but not actionable**
- “world peace”
- “bring the world closer together”
- “scale and democratize education”

**Humble but valuable**
- “register 100 voters in Selma, Alabama”
- “let Harvard students see what dorms their friends are in”
- “teach my 12-year old cousin Nadia how to multiply fractions”
The designer must create the subgoals and interactions to help them accomplish it.

**Goal:** Buy a book

**Subgoal:** Find it

**Interaction:** Type, click

**Add to cart**

**Interaction:** click

**Enter payment info**

**Interaction:** Type, click, point

**Place order**

**Interaction:** Click
Low-level interactions take time and effort. Minimize them because you do them a lot.

Time to move your pointer to a target

\[ \text{Time} = a + b \times \log ( \text{S} ) \]
Know the users’ goals and design interactions as: execution and evaluation

**Execution**
- Plan the action
- Specify the action sequence
- Perform the action sequence

**Evaluation**
- Perceive the state of the world
- Interpret the perception
- Compare the outcome with the goal
Following instructions sux. Why?

Unexpected things happen.

Instructions are rigid.

Feedback allows people to make mistakes an adapt.
Every time the user executes an action, the interface should provide feedback

**High-level** actions, like buying a book

**Mid-level** actions, entering paying information

**Low-level** virtual actions, like clicking a button
Final Project Rubric

• Interaction:
  • High-level:
    • Mid-level:
    • Low-level:

• Technical:

• Visual Information Design:
Final Project Rubric

• Interaction:
  • High-level:
    • Are the users able to accomplish the goal?
    • Is the persona and goal specific enough to define who the target user is?
  • Mid-level:
    • Navigation:
      • Are there subgoals and interactions that help them accomplish it?
      • Does each state have a clear subgoal, options and transitions?
    • Feedback: do users learn from feedback and can they recover from errors?
  • Low-level:
    • Widgets: Are the correct widgets used? (lists/search/hierarchy, autocomplete)
    • Low level Interaction: Are they efficient for the user to execute? (target size, number of clicks)

• Technical:

• Visual Information Design:
High-level Interaction

Idea and persona
Idea and persona

What **person**
Uses what **media**
And has what **interaction** with it
To achieve what **goal**?
Specific Goals are actionable

General Goal: “Clean the house.”

Specific Goal: “Fold that basket of laundry.”

General goals sound appealing, but specific goals are actionable: What **person** is going to execute what **action** on what **object** and get what **benefit**?
Mid-level Interaction

States and transitions
For complex goals, break the task into states, options, and transitions to new states.
Think of it like a video game and
You are designing the experience of your user
Examples of
States, Options and Transitions
Goal: Find “The Design of Everyday Things”

What **state** am I in?
Product Search

What **options** do I have?
All the products

How do I **transition**?
Select an product name
Goal: find “The Design of Everyday Things”

What state am I in?
Product search results

What options do I have?
All the products – different editions

How do I transition?
Select an product name
Goal: Decide if I’ll buy “The Design of Everyday Things”

What state am I in?
Product info page

What options do I have?
Kindle/paper back,
Look in book, reviews
Add to cart

How do I transition?
Add to cart OR
Go back
Goal: Decide if I’m done.

What **state** am I in?
“Add to cart” feedback

What **options** do I have?
Check out
See cart
Keep shopping

How do I **transition**?
Click one of the options.
Goal: Pay for it.

What **state** am I in?
Enter payment

What **options** do I have?
Which payment methods

How do I **transition**?
Press Continue
Goal: Buy it.

What state am I in?
- Review and place order

What options do I have?
- Shipping options,
- Change payment options

How do I transition?
- Press “Place your order”
After I buy, what state do I transition to?
For complex goals, break the task into states, options, and transitions to new states.
States for the Zumba Playlist maker

Subgoal: Create new playlist

Subgoal: Add songs

A typical error users make is to have a playlist that’s too long.

(That’s why they need an app to help them do it!)

Subgoal: Play the playlist

Subgoal: Finalize playlist

Subgoal: Remove songs when it’s too long
Low-level Interaction

Presenting users with options, widgets, and clicks
Time to move your pointer to a target:

\[ T = a + b \times \log \left( \frac{2D}{S} \right) \]
Every low-level action times time and effort. How could use improve it?
Product search: How many options are there?

Billions
Search Results: How many (relevant) options are there?

About 10
Amazon Departments: How many options are there?

About 100
When displaying \(\sim 10\) options, how do you display them to suit the needs and abilities of people?
When displaying ~100 options, how do you display them to suit the needs and abilities of people?

A tree
When displaying \(~1000\) options, how do you display them to suit the needs and abilities of people?
When displaying options, the number of options determines the interaction style.

~10 items = list  
~100 items = tree  
~1000 items = search
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• **Technical:**
  • Is there enough media to accomplish the goal?
  • Do the technical elements work?

• **Visual Information Design:**
“I tried silk chiffon, but it didn’t work.”
“I tried the Google Object Detection, but it didn’t work.”
MAKE IT WORK.
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• Visual Information Design:
  • Does the interface guide users attention through the application?
    • Primary: Are there appropriate conceptual groupings?
    • Secondary: within groupings are the most important things emphasized in TWO ways, and less important things de-emphasized?
All sites display information
Users have a spotlight of attention.

Use a visual information hierarchy to guide users’ attention.
Every subgoal should have visual information design to guide users through it.
Seven tools for visually indicating importance

- Conceptual grouping
- Location
- Whitespace
- Size
- Images
- Contrast
- Color
Use multiple tools. Use color last. Use size, whitespace and contrast instead.

You are cordially invited to Robert and Alexandra’s delectable after dinner party. Wine and nibbles will be served. When: February 20\textsuperscript{th}, 2019 at 9:30pm. Where: the pad. If you need directions, ping us. Kindly let us know if you will be attending by February 1\textsuperscript{st}. 

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Examples
Step 1: Listen

A Minor Third has 3 half steps between the lower note and the higher note. Try counting the number of lines and spaces between the two notes on the image above.

The "minor" quality indicates that this interval comes from the minor scale of its lower note, and that the interval sounds slightly dissonant or unhappy.
I like that there are intermedia quizzes to help me test my knowledge as I learn it.

For me, the navigation wasn’t a little constraining,
What if you gave user more control for how to get back and forth between intervals?
CHOREO Formation Maker

Load a YouTube video. Create formations for your choreography.

https://www.youtube.com/watch?v=MOwaUIXZxkI

Load
I like...

I liked how easy it was to map out the formation. You can see the video, and drag, circles, and name them.

For me... what if...

For me, it didn’t quite feel done, or like I’d reached my goal. What if when you’re done you could see all the formations in a list?
I like the interaction of dragging ingredients

For me, it was a little hard to read. What if we used more media and information design here?

For me, this output is a little mysterious. Maybe you could tell me why I’ll like this, and give me a ranked list in case I want to change my preferences a little?
Click around the classroom to learn the signs!

Hover your mouse over the classroom to see where to click.
Click to see the sign!

You have 11 items left to learn!
I like the interaction of clicking on the objects, And the feedback about how many items left is good. It gives me a lot of user control and freedom. (but still guides me with feedback)

For me, I wasn’t sure if I learn them. What if we had a quiz.
Select a Painting
For me, it was unclear what this site was about. What if you gave more cues to why I’m selecting a painting.

The immediate feedback you get when you pick colors And see them on the map.

I can easily tell when two colors are unreadable together (and I can easily fix it)
I like the interaction of dropping players into their position.

For me, it was unclear what this site is about. What if you gave more cues to what the starting state is.
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Is design really this hard?

Or are we just stupid?
Design is hard because requires combining many elements that are dependent on each other.
Design requires synthesizing many elements that are completely dependent on each other.

Idea:
Help NBA fans recognize the strategy during games
Graphic design is the final step for designers. Why?

But what do users perceive first? Graphic Design
Is that everything I need to know to be the next tech unicorn?
Market Research

Is there an audience I can research that will pay for this?

Specific user need:
A student at Columbia trying to pick classes that don’t conflict

Specific user need:
The Columbia Law School Registrar finding the right size classrooms to schedule all their classes
Coursedog

Justin Wenig, COMS 4170 Spr 18

Coursedog

Coursedog automates administrative tasks for universities starting with course scheduling.

New York, New York, United States

Business Information Systems, Project Management, Software

Greater New York Area, East Coast, Northeastern US

Mar 14, 2018

Active

Seed

Seed

11-50
If you start general, you may never start.

If you start specific, you can usually generalize later.
Don’t get stuck.

Have more ideas.
Flare and focus: **Explore** many options, **test** them to decide.

Web app ideas

Learn Chinese tones
Learn Pick-and-Roll
Make a Zumba playlist
Track & increase walking fitness
Track & decrease Splenda you intake
Track Columbia Outreach progress
Learn different kinds of Jazz
Sequential Flare and Focus

Brainstorm
- Paper
- Prototype
- User test

Explore technical options
- Run them
- Locally
- Fit to your problem

Computer Prototype
- User Feedback

Ideas
Technical Elements
User Interface
Brainstorming: The idea itself is risky. So we have many ideas before picking one.
Don’t get too attached to one idea.

You are not your idea

You are an idea machine.
Perfection is impossible.

Iterate to **add value and mitigate risk**
The Waterfall Model assumes all the steps will work perfectly. They won’t.

- One button
- Touch screen
- Soft keyboard

What if a touch screen can’t be implemented?

What if the hardware weighs 30 lbs?

What if this device is so slow it’s unusable?

How can we keep up with the competition?
Iterative Design adds value one step at a time by iteratively testing risky features.
Goals
1. Master front-end and back-end technologies for making interactive websites.
2. Discover specific user needs by developing a low-level, mechanical model of human behavior.
3. Practice iterative design to meet specific user needs.

INSTRUCTOR
Prof. Lydia Chilton
OH: Tuesdays 4-5, CEPSR 612

Please contact staff through Piazza only

TAS
Katy Gero
OH: Wed 2:30-3:30, CEPSR 603
Savvas Petridis
OH: TBA, CS OH room

WEEKLY SCHEDULE
Lecture
Friday 2:10–4pm in Mudd 337
(also known as the Engineering Terrace)

TEACHING METHOD
This is a studio style class in the tradition of art and architecture. Students are expected to already know the fundamental techniques. We will practice these techniques as well as give and recieve critique on a weekly basis. Attendance is mandatory. Any absence, excused or otherwise, must be made up
Lastly,
You have always got me.

My best selling product is pants,
But I’m trying to make shirts.

I’m trying to find a UX designer

I missed my flight, what should I do?

I can’t get my site to run on digital ocean

I can’t [random thing I downloaded] to run!

I need feedback on my summer internship project

I might be interested in grad school

chilton@cs.columbia.edu