<table>
<thead>
<tr>
<th>Class</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigned</td>
<td>Good and Bad Design</td>
<td>Design a Game</td>
<td>Stakeholder analysis for games</td>
<td>Articulating Design HW</td>
<td>2 Subject Usability Test</td>
<td>Transcription &amp; State Diagram</td>
<td>K-Scripts</td>
<td>K-Scripts 2</td>
<td>Make a Commercial</td>
<td></td>
</tr>
<tr>
<td>Due</td>
<td>Good and Bad Design Movie</td>
<td>Game + SHA</td>
<td></td>
<td>Articulating Design HW (NOT ASSIGNED)</td>
<td>Usability Test, Transcription &amp; Diagram</td>
<td>K-Scripts</td>
<td>K-Scripts 2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How to Articulate the Design

1. Sketch it out
   - Refine ideas
   - Refine expression of the ideas

2. Draw out the connections
   - Refine the logic
   - Refine the sketch

3. Articulate the details
   - Define the specifics
   - Refine the connections
   - Refine the sketch
K-Scripts: Translating Research into Design

• K-Scripts are scripts that show user interactions
• K-Scripts are easy to edit
• Quick to generate
• Allow a group to work collaboratively
The ordering process for a meatball sub

<table>
<thead>
<tr>
<th>Who</th>
<th>What</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>Walks up to the counter and sees a menu listing sandwiches. Looks at deli guy and says “I’ll take a large meatball sub”</td>
<td>If the deli guy is busy, the customer would generally wait. Perhaps we should add a bell?</td>
</tr>
<tr>
<td>Deli Guy</td>
<td>“ok, do you want cheese?”</td>
<td>The cheeses are not listed on the menu, most people know what they want. If there is a long enough pause, the deli guy would tell them their options</td>
</tr>
<tr>
<td>Customer</td>
<td>“…uh…”</td>
<td></td>
</tr>
<tr>
<td>Customer</td>
<td>“yeah, do you have provolone?”</td>
<td>Customers generally know that meatball subs have tomato sauce, and not some other kind. And the deli guy will make it in view of the customer.</td>
</tr>
<tr>
<td>Deli guy</td>
<td>“yeah. Sauce?”</td>
<td></td>
</tr>
<tr>
<td>Customer</td>
<td>“yeah.”</td>
<td></td>
</tr>
<tr>
<td>Who</td>
<td>What</td>
<td>Notes</td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>User</td>
<td>While at a bar, a college student wants to record their friends being silly on Halloween. User opens up SuperSocialSite app on iPhone</td>
<td>App would also be available for Android, but not for first release</td>
</tr>
<tr>
<td>App</td>
<td>Splash screen is shown, then 3 buttons: Photo, Video, Audio</td>
<td>This assumes the user has logged in before and gave permission for geolocation</td>
</tr>
<tr>
<td>User</td>
<td>Clicks Video button</td>
<td></td>
</tr>
<tr>
<td>App</td>
<td>Screen shows standard iPhone “From Library” and “From Camera”</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td>Clicks on “From Camera”</td>
<td></td>
</tr>
<tr>
<td>App</td>
<td>App pops up standard iPhone video capture screen</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td>Clicks record button and takes video of his friends making faces and being silly. Users see countdown timer go from 15 seconds to</td>
<td>The app only lets user capture short videos</td>
</tr>
</tbody>
</table>
Example interaction (Observation)

- iPhone User: “Siri, remind me”
- Siri: “Ok just tell me what you wanted to be reminded About”
- iPhone user:” Meet with Dave Droga on Tuesday”
- Siri “What time your event”
- iPhone user: “10 am”
- Siri: “Ok, here’s your meeting, Note that you already have 2 events that overlap with this. Shall I schedule it anyway?”
In Class Exercise-Make a K-Script for the Siri Interaction

- Use 3 column method
- Add notes where needed

- iPhone User: “Siri, remind me”
  - Siri: “Ok just tell me what you wanted to be reminded About”
  - iPhone user:” Meet with Dave Droga on Tuesday”
  - Siri “What time your event”
  - iPhone user: “10 am”
  - Siri: “Ok, here’s your meeting, Note that you already have 2 events that overlap with this. Shall I schedule it anyway?”
Dialog Systems
Phone System Interfaces
How do phone systems work?
Audio from Phone, sent to Phone Network

Phone network sends audio to Speech System

System Processes Audio

System performs action
Breaking It Down
2 Questions

How would you ask someone to tell you what they ate in a day?

In Groups: What might you have the computer listen for?
How Speech Systems Work

1) Ask question
2) Listen for answer
3) Do something... (like as more questions, or retrieve some data and then ask more questions, transfers the call, etc.)
Why Speech Tech?
Why Examine Dialogue Systems?

### K-Script

<table>
<thead>
<tr>
<th>Who's talking</th>
<th>What they're saying</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Welcome to Blue Cross of California, providing service to the Rita Trust. So I can know who you are, say either “Member” “Provider” or say “I’m none of those.”</td>
</tr>
<tr>
<td>Caller</td>
<td>Member</td>
</tr>
<tr>
<td>System</td>
<td>Alright – how can I help you? You can say, “Claims”, “Benefits” or “Eligibility”. You can also say “More options” Go ahead:</td>
</tr>
<tr>
<td>Caller</td>
<td>Eligibility</td>
</tr>
<tr>
<td>System</td>
<td>Eligibility. Got it. Say the member ID. (…you can find it on your Blue Cross ID card.)&lt;PAUSE&gt; It’s mostly numbers, but might contain letters also.</td>
</tr>
<tr>
<td>Caller</td>
<td>118A50675</td>
</tr>
<tr>
<td>System</td>
<td>…and for security, what’s the member’s birth date. For example, you could say March 2nd nineteen-sixty-three.</td>
</tr>
<tr>
<td>Caller</td>
<td>June 1st 1975</td>
</tr>
</tbody>
</table>

### State Diagram
State Machines

A *state* describes a behavioral node of the system in which it is waiting for a trigger to execute a transition.

*(Wikipedia, Sept 19th 2011)*
Draw the Diagram: Buying a car

1. Decide to Get New Car
   - Find Dealership I Like
2. Determine Which Car I Want
   - After test driving and reviewing features
3. Negotiate Price
   - Do not agree on price
   - Agree on Price, Pay, Sign Paperwork
4. Bike ride home
5. Drive Car Off Lot
For Dialog Systems: Brand New Question? Go to a New State, (generally…) 

ENTRANCE 
- User enters the new state and (generally) the system asks a question and listens for an answer 

EXIT 
- IF the system hears something that sounds like a good answer, the system exits that state - performing an action 
- IF the system hears something that may not sound like a good answer, the system asks the user for clarification, but DOES NOT EXIT the state, usually. 
- IF the system hears nothing, the system asks the user for clarification, but DOES NOT EXIT the state, usually. 
- IF there are too many failures, the state fails and exits on failure
Challenge!
Let’s Make a Diagram Together

Let’s Make a Diagram Together: Design a phone system that collects a credit card using speech

1) Write out the K-Script (in groups)
2) Draw out the diagram (as a class)
Visual Representation: How the a Pattern Recognizer Works

(which is what a speech system is)
Visual: The Recognizer Confidence Score
Visual: The Recognizer Confidence Score

93 97 20 88
The Recognizer Confidence Score

- High score = Match
- Medium confidence = Disambiguation
- Low score = Retry (no match)
- No score = Re Prompt (no input)

- High score = continue with dialog
- Medium confidence score = verify: “I think you said...<option> is that correct?”
- If rejected, tell user that you didn’t understand what they said
- If silence, tell user you didn’t hear anything
Challenge!
Applecare Dialog System Transcription

Q: How many states are there in this next example?
Thank you for calling the apple service and support line. your call may be monitored or recorded. Are you calling about technical support for an Apple product?

Yes

Do you have a case ID?

No.

Ok. Please say the name of the apple product for which you want technical support.

A mac book air

Sorry I didn’t understand you, please say the name of the apple product for which you want technical support.

A Mac book air

Macbook Air is this correct?

Yes

If you're having problems running a software application on your apple product, please name the application.

<silence>

Sorry I didn’t hear you, if you're having problems running a software application on your apple product, name the application, otherwise say “Let’s go on”

Let's go on

Ok. Is this for an educational institution?

Yes

Please wait while your call is transferred to an apple advisor
K-Scripts for Research, Design, $ales
What Not to Do:
Transcript of Live System

Prompt Text

Thank you for calling Blue Cross of California’s customer service line providing Service to the Rita Trust. Welcome to our new automated system! You can answer a question by speaking your response any time; usually a word or two will do. And I’ll try to emphasize the best words to say for the choice you want. If you’re having difficulty you can say operator and I’ll transfer you to one of our representatives for further assistance. If this is a medical emergency please hang up and dial 911. Are you a plan member, a healthcare provider a group administrator or other?

Member

Your member ID may contain both letters and numbers. Please say your nine-digit alphanumeric ID card number.

118A50675

For security what is your date of birth?

March 20th, 1963
Welcome to Blue Cross of California, providing service to the Rita Trust. So I can know who you are, say either “Member” “Provider” or say “I’m none of those.”

Alright – how can I help you? You can say, “Claims”, “Benefits” or “Eligibility”. You can also say “More options” Go ahead:

Eligibility

Eligibility. Got it. Say the member ID. (...you can find it on your Blue Cross ID card.) <PAUSE> It’s mostly numbers, but might contain letters also.

118A50675

...and for security, what’s the member’s birth date. For example, you could say March 2nd nineteen-sixty-three.

June 1st 1975
Homework

- Transcribe a speech system (not Applecare :) ) verbetum. Make sure you don’t answer 1 question, and make sure you mumble the answer to another. The system should ask you about 10 new questions.
- Draw a state diagram (Omnigraffle, MS-PowerPoint, etc., save as PDF). Diagram should be about 10 states big.
ESD.051J / 6.902J Engineering Innovation and Design
Fall 2012

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