

ABCFGH
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ESD.051 / 6.902

Engineering Innovation & Design

Principles of Design (1 - 10)

| Class | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----------------------|---------------------|---------------------------------------|--------------------------------|---------------------|--------------------------------|--------------------------|---------------------------------------|---|--------------------------|-------------------|
| Day of Week/ Date | W Sept 5 | M Sept 10 | W Sept 12 | M Sept 17 | W Sept 19 | M Sept 24 | W Sept 26 | M Oct 1 | W Oct 3 | W Oct 10 |
| Lecture Topic | Introduction | 10 Step Design Process Dieter Rams | Research Stakeholder Analysis | Articulating Design | Articulating Design Psychology | Usability | Dialogue Systems Technology (Siri+) | Dialogue System Design (Questions/Feedback) | Dialogue System Design 2 | Branding |
| Assigned | Good and Bad Design | Design a Game | Stakeholder analysis for games | | Articulating Design HW | 2 Subject Usability Test | Transcription & State Diagram | K-Scripts | K-Scripts 2 | Make a Commercial |
| Due | | Good and Bad Design Movie | | Game + SHA | | | Articulating Design HW (NOT ASSIGNED) | Usability Test, Transcription & Diagram | K-Scripts | K-Scripts 2 |

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

REVIEW

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

REVIEW

The ordering process for a meatball sub

| Who | What | Notes |
|----------|---|--|
| Customer | Walks up to the counter and sees a menu listing sandwiches. Looks at deli guy and says "I'll take a large meatball sub" | If the deli guy is busy, the customer would generally wait. Perhaps we should add a bell? |
| Deli Guy | "ok, do you want cheese?" | |
| Customer | "...uh...." | 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 |
| Customer | "yeah do you have provolone?" | |
| Deli guy | "yeah. Sauce?" | |
| Customer | "yeah." | 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. |

REVIEW

User wants to take and post video to SuperSocialSite™

| Who | What | Notes |
|------|---|---|
| User | While at a bar, a college student want's to record their friends being silly on Halloween. User opens up <u>SuperSocialSite</u> app on iPhone | App would also be available for Android, but not for first release |
| App | Splash screen is shown, then 3 buttons: Photo, Video, Audio | This assumes the user has logged in before and gave permission for geo-location |
| User | Clicks Video button | |
| App | Screen shows standard iPhone "From Library" and "From Camera" | |
| User | Clicks on "From Camera" | |
| App | App pops up standard iPhone video capture screen | |
| User | Clicks record button and takes video of his friends making faces and being silly. Users see countdown timer go from 15 seconds to | The app only lets user capture short videos |

REVIEW

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?”

REVIEW

In Class Exercise-Make a K-Script for the Siri Interaction

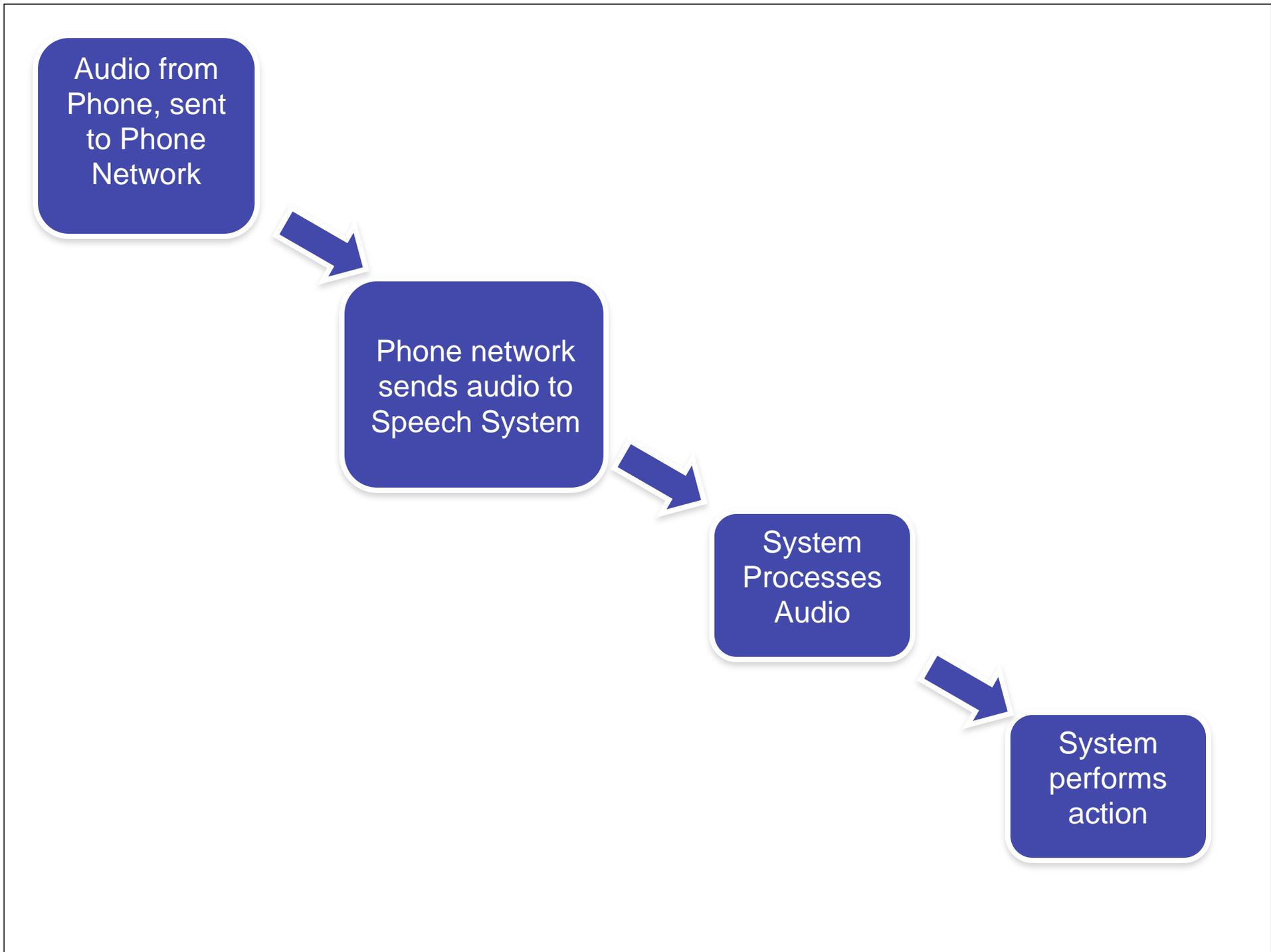
- Use 3 column method
- Add notes where needed
 - iPhone User: “Siri, remind me”
 - Siri: “Ok just tell me what you wanted to be reminded About”
 - iPhone user:” Meet with Dave Droga on Tuesday”
 - Siri “What time your event”
 - iPhone user: “10 am”
 - Siri: “Ok, here’s your meeting, Note that you already have 2 events that overlap with this. Shall I schedule it anyway?”

REVIEW

Dialog Systems

Phone System Interfaces

How do phone systems work?



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

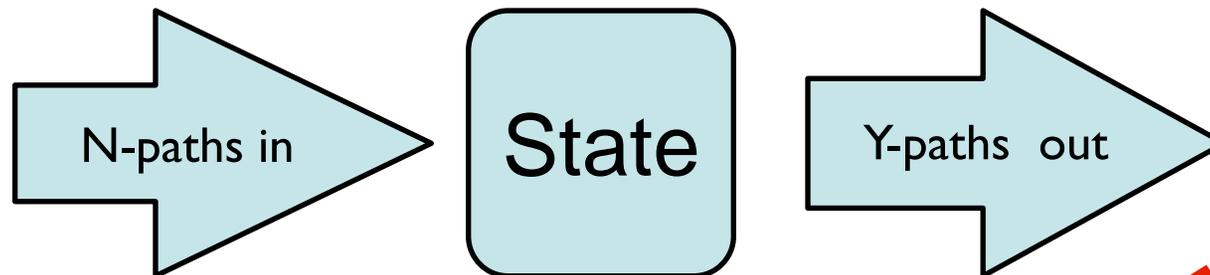
- 1) Ask question
- 2) Listen for answer
- 3) Do something... (like ask more questions, or retrieve some data and then ask more questions, transfers the call, etc.)

Why Speech Tech?

State Machines

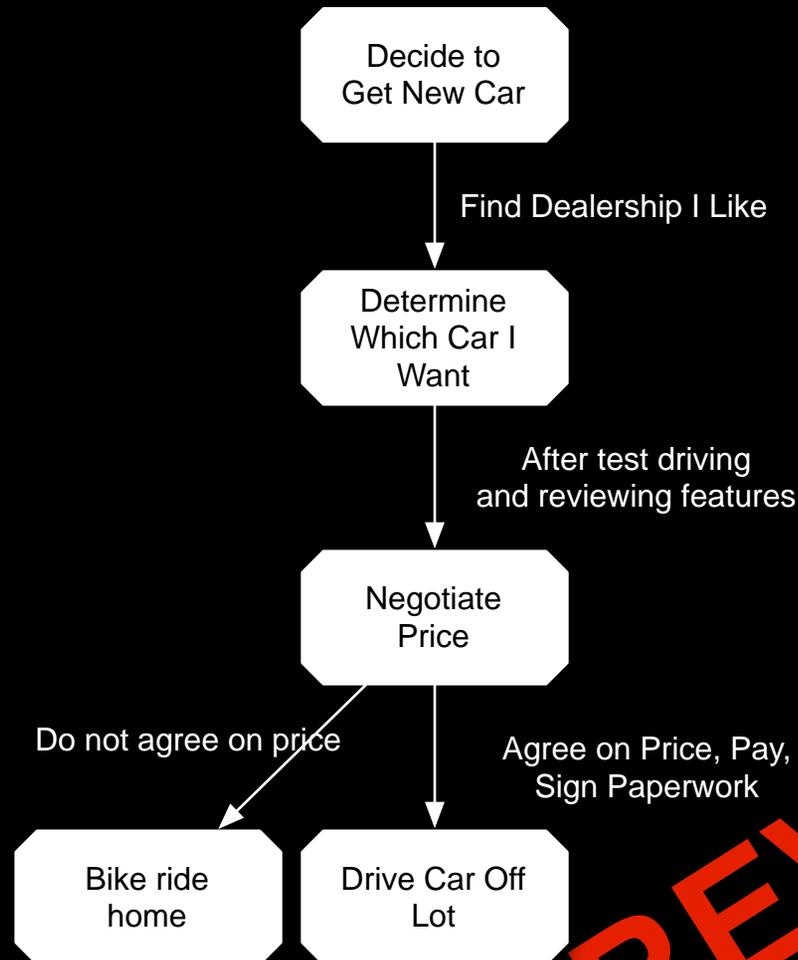
A *state* describes a behavioral node of the system in which it is waiting for a trigger to execute a transition.

(Wikipedia, Sept 19th 2011)

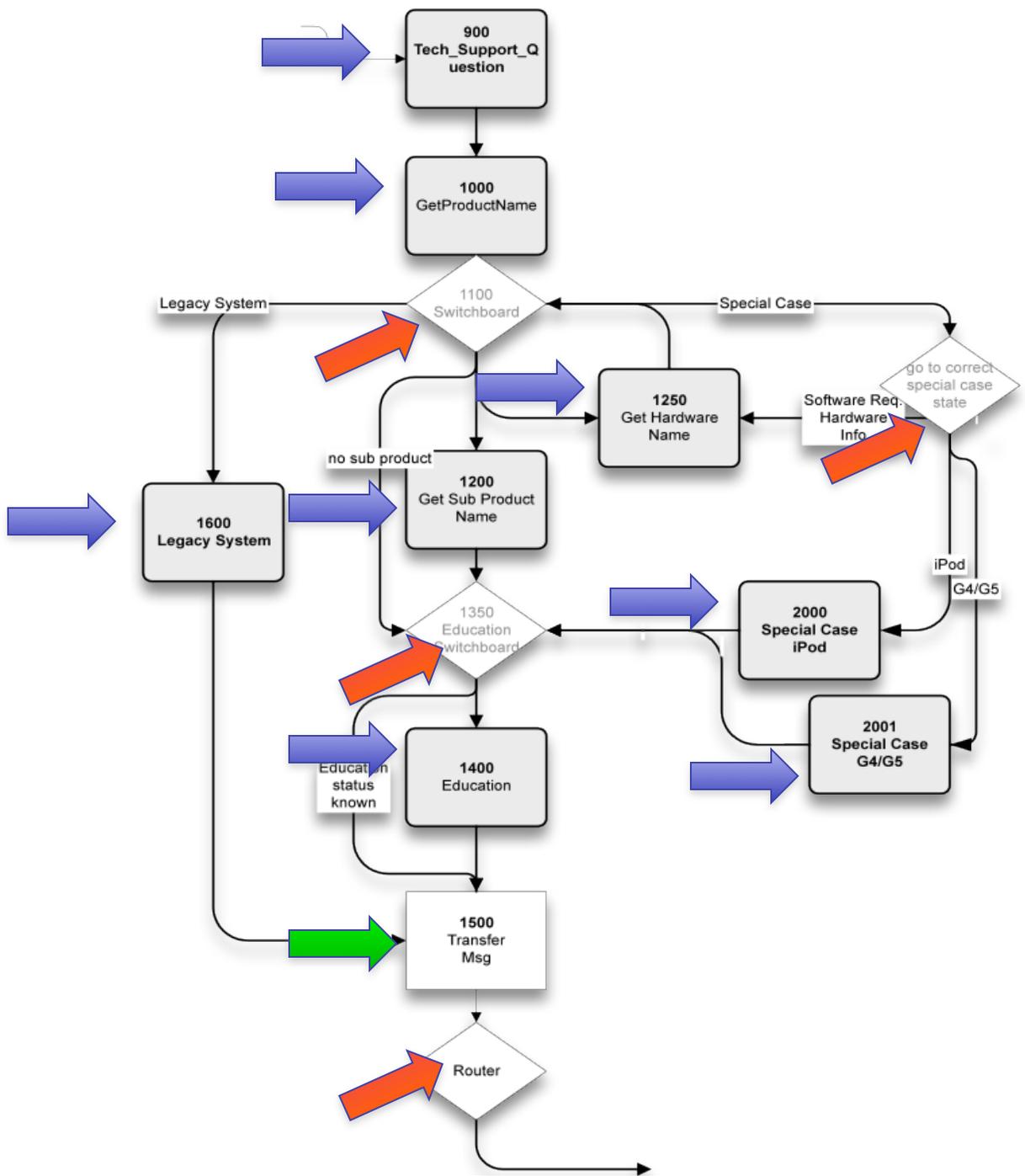


REVIEW

Draw the Diagram: Buying a car



REVIEW



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

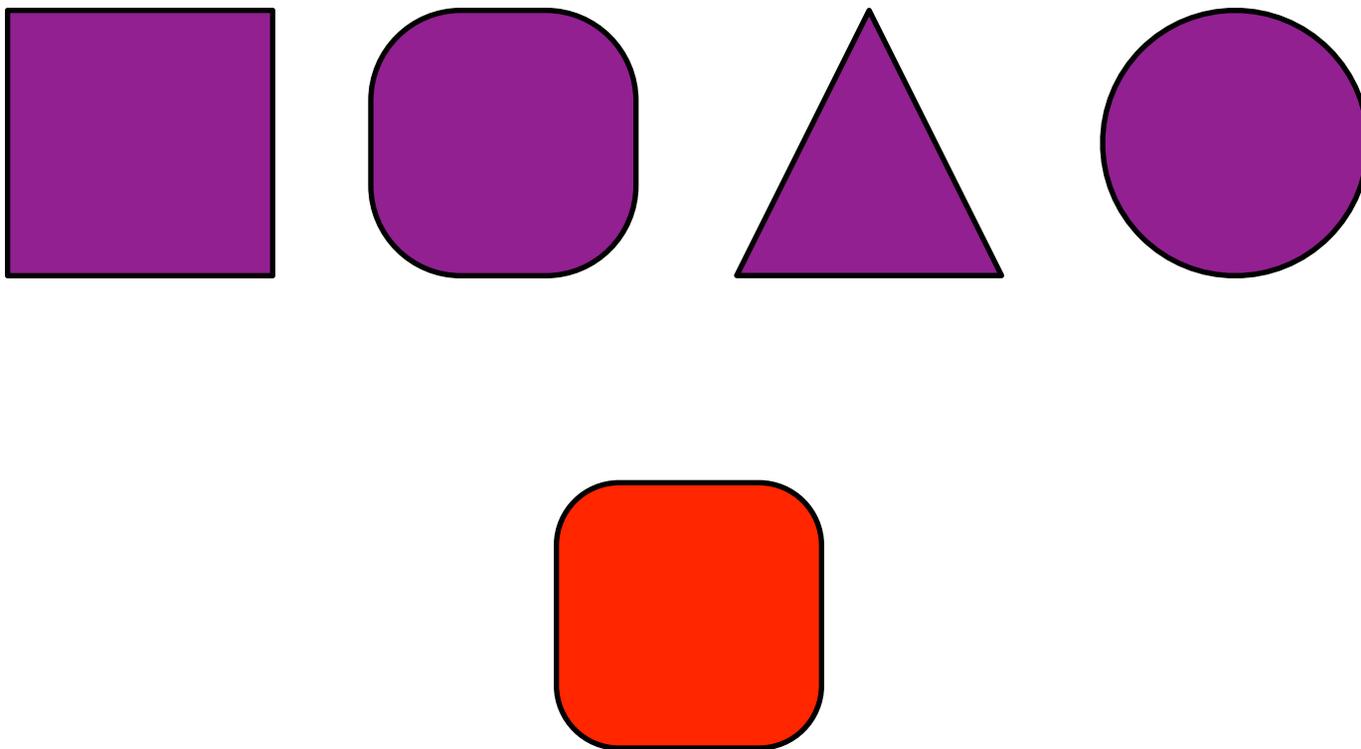
- 1) Write out the K-Script (in groups)
- 2) Draw out the diagram (as a class)

Visual Representation: How the a Pattern Recognizer Works

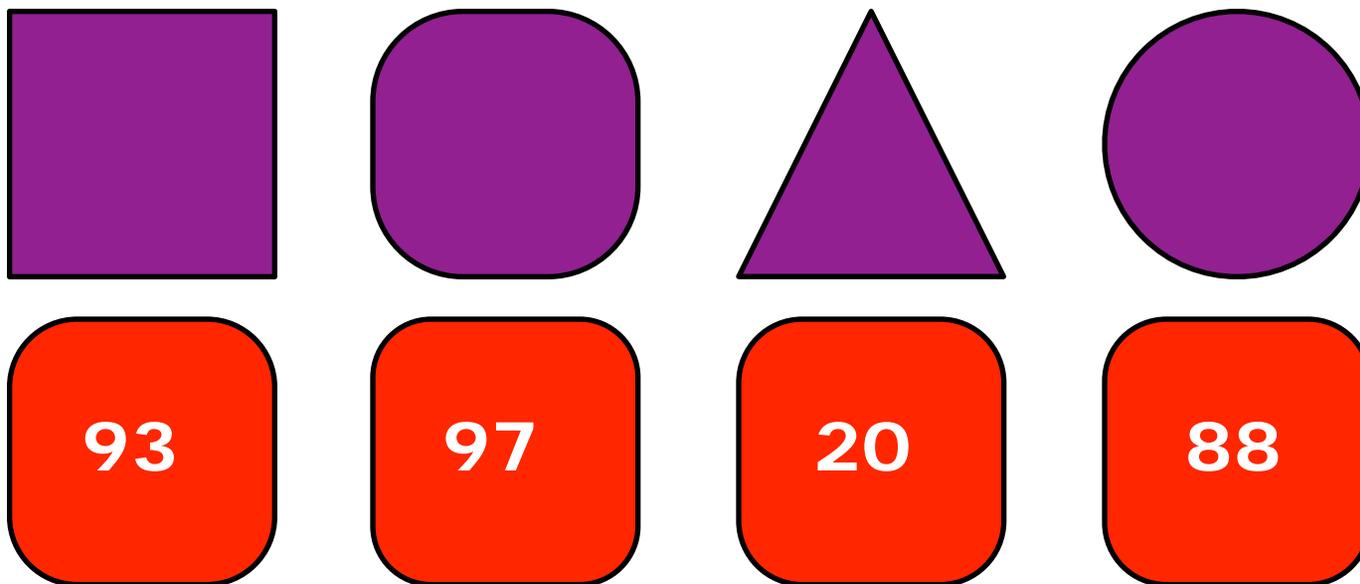
(which is what a speech system is)



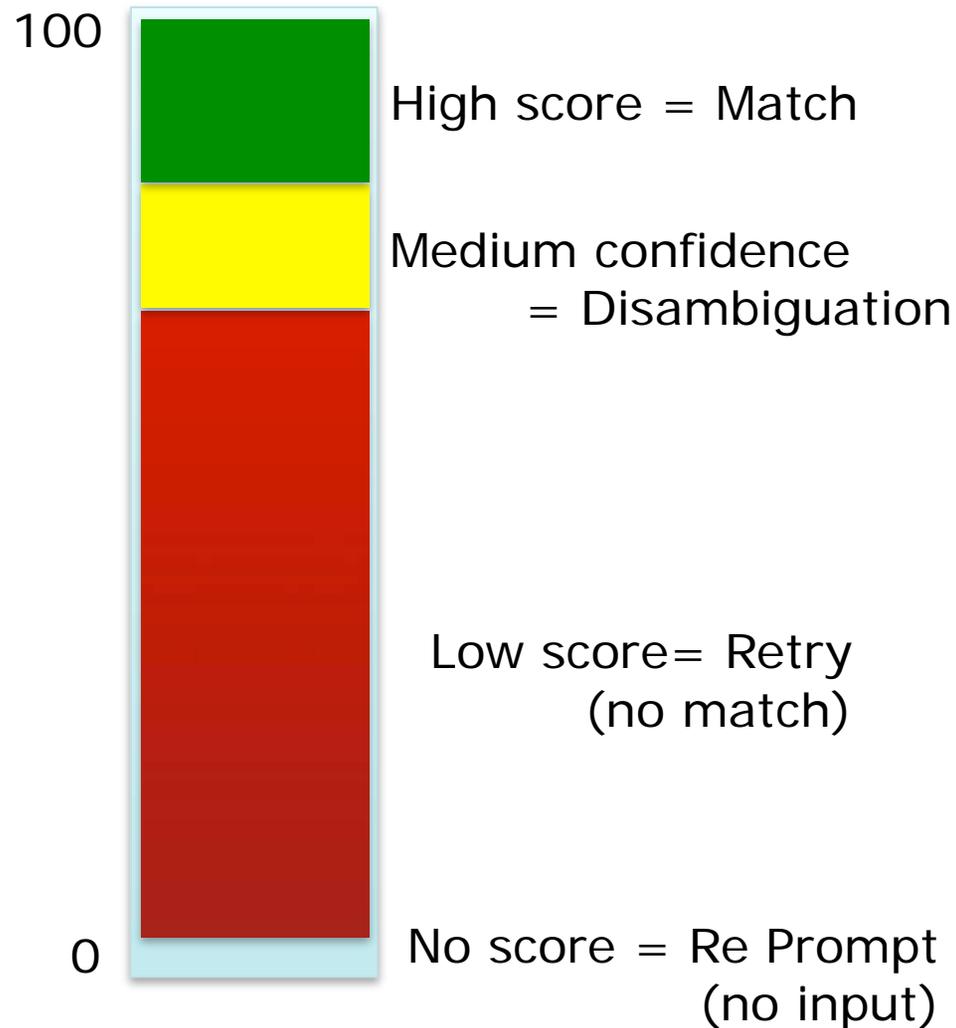
Visual: The Recognizer Confidence Score



Visual: The Recognizer Confidence Score



The Recognizer Confidence Score



- 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? |
| <i>Member</i> |
| Your member ID may contain both letters and numbers. Please say your nine-digit alphanumeric ID card number. |
| <i>118A50675</i> |
| For security what is your date of birth? |
| <i>March 20th, 1963</i> |

Getting it Right using K-Script to Communicate to Exec.



| What they're saying |
|---|
| 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." |
| Member |
| 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 2 nd nineteen-sixty-three. |
| June 1 st 1975 |

Homework

- Transcribe a speech system (not Applecare :)) verbatim. 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

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