



**HCS 7367**  
**Speech Perception Lab**

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## Vowel identification experiment

- **What we need:**
  - A Matlab script to implement a labelled, 12-response button box on the computer screen.
  - A list of the stimuli to be included.
  - A random number generator to scramble the order of the stimuli.
  - A for-loop to cycle through the stimuli and play each file, record the listener's response and store the responses in a data file.
  - A Matlab script to load the data file and score the responses, keeping track of correct and incorrect answers.

## Generate list of files

- Put waveform files into a single directory
- Use the function "dir" to get the listing:
  - » files=dir('c:\splab\vowel\_expt\stimuli\\*.wav');
  - » files=char(files.name);
  - » [nfiles,nchar]=size(files); % 10\*12=120 files

## Randomize the list

- Given the ordered list of filenames, use the randperm (random permutation) function to scramble the order:
  - » randlist=randperm(nfiles);
  - » stimlist=files(randlist,:);

## Create button boxes

- Make a GUI (graphical user interface) control pushbutton:
  - » h=uicontrol('Style','pushbutton',...
  - »       'Units','Norm',...
  - »       'Pos',[0.25 0.4 0.15 0.2], ...
  - »       'FontSize',18,...
  - »       'FontName','Arial',...
  - »       'String','heed',...
  - »       'Callback',str);

## Make the button boxes

- We need 12 buttons, so embed them in a for-loop:
  - » for ivow=1:12
  - »     h(ivow)=uicontrol('Style','pushbutton',...
  - »       'Units','Norm',...
  - »       'Pos',[xl(ivow) yl(ivow) 0.145 0.2], ...
  - »       'FontSize',18,...
  - »       'FontName','Arial',...
  - »       'String',hvd(ivow,:),...
  - »       'Callback',str);
  - » end;

## Response button boxes

- You can also create information text boxes

```
» hh1=uicontrol('Style','text',...
»           'Units','Norm',...
»           'Pos',[0.3 0.15 0.5 0.07],...
»           'String','Click inside the box',...
»           'FontSize',15);
```

## Response button boxes

- Here's how to make a "start" button:

```
» hh2=uicontrol('Style','Pushbutton',...
»           'Units','Norm',...
»           'Pos',[0.3 0.85 0.5 0.07],...
»           'String','Click here when ready',...
»           'Callback','delete(hh2)',...
»           'FontSize',15);
» drawnow;
» waitfor(hh2);
```

## The main playback loop

```
» for i=1:nfiles,
»   PROG='!c:\windows\system32\sndrec32.exe /play /close '
»   PATH='d:\class\splab\fa04\vowel_expt\stimuli\';
»   FILE=deblank(stimlist(i,:));
»   eval([PROG PATH FILE]);
»   figure(1);
»   set(gcf,'userdata',rand);
»   waitfor(1,'UserData');
»   resplist(i,1:length(hvd(r,:)))=setstr(hvd(r,:));
»   eval(['save ' subj]);
» end;
```

## Download the playback script

[http://www.utdallas.edu/~assmann/hcs7367/vowel\\_id.m](http://www.utdallas.edu/~assmann/hcs7367/vowel_id.m)

- Put all 90? waveform files in a single directory
- Change directory name to match this in spr.m
- Change SNDREC program directory if necessary
- Run the program and report any errors to me

## Scoring the results

- Results are stored in the Matlab data file specified.
- Matlab data files have a .MAT extension.
- Start Matlab and type:
  - » load mydata.mat

- Next week we'll develop a scoring program.

- In the meantime you can score your results by hand:

```
» [stimlist resplist]
LDhoed.wav hoed
TShod.wav hod
HChod.wav hod
TSheed.wav heed
AMhood.wav hood
CCherd.wav hood
...
```