Chatterbots

[](http://www.google.co.uk/imgres?q=university+of+Essex&hl=en&qscrl=1&nord=1&rlz=1T4ADFA_enGB411GB420&biw=1022&bih=627&tbm=isch&tbnid=BTU0gFlnIHhJqM:&imgrefurl=http://www.eurostudies.co.uk/newpost/services/higher_education/universityofessex.html&docid=8hF61V98L-_5VM&imgurl=http://www.eurostudies.co.uk/newpost/images/essexbuilding.jpg&w=399&h=270&ei=7CXrT5fHCcSv0QWb99HqBQ&zoom=1&iact=hc&vpx=324&vpy=88&dur=2235&hovh=185&hovw=273&tx=146&ty=113&sig=114410633916800936800&page=4&tbnh=133&tbnw=212&start=51&ndsp=18&ved=1t:429,r:1,s:51,i:310) [](http://www.google.co.uk/imgres?q=university+of+Essex&start=87&hl=en&qscrl=1&nord=1&rlz=1T4ADFA_enGB411GB420&biw=1022&bih=627&tbm=isch&tbnid=iuvriRLlGxdpkM:&imgrefurl=http://www.universityreview.org/university-of-essex-ranking-and-address/&docid=HEcPjYAhG_mJEM&imgurl=http://www.universityreview.org/wp-content/uploads/2012/04/University-of-Essex.png&w=500&h=308&ei=Ih_sT5_COc3a0QWO5sj5DA&zoom=1&iact=hc&vpx=639&vpy=185&dur=3168&hovh=176&hovw=286&tx=156&ty=123&sig=114410633916800936800&page=6&tbnh=108&tbnw=176&ndsp=18&ved=1t:429,r:7,s:87,i:28)

**Introduction to chatterbots**

The following passage is taken directly from Wikipedia:

*In 1950, Alan Turing published his famous article "Computing Machinery and Intelligence" which proposed what is now called the Turing test as a criterion of intelligence. This criterion depends on the ability of a computer program to impersonate a human in a real-time written conversation with a human judge, sufficiently well that the judge is unable to distinguish reliably—on the basis of the conversational content alone—between the program and a real human. The notoriety of Turing's proposed test stimulated great interest in Joseph Weizenbaum's program ELIZA, published in 1966, which seemed to be able to fool users into believing that they were conversing with a real human.*

Eliza consisted of a file containing a series of key words and/or sentences, with an associated response sentence, for example if the user typed: “hello what a lovely day” Eliza would find a match for the word hello and respond with “hi how are you doing” thereby creating the illusion of intelligence although all that has taken place is the matching of a keyword.

More recent Chatterbots include ALICE which uses XML and typically contains in excess of 50,000 sentences in its database. What makes ALICE particularly clever is the ability to decompose sentences to produce multiple responses and extract and remember the context of the conversation.

There is a competition called the Loebner Prize which runs annually and broadly responds to the Turing challenge. The current 2017 award is held by a machine called Mitsuki by Steve Worswick.

**Writing your own Chatterbot**

Taking the basic concept of Eliza we can write a very simple Chatterbot of our own. My suggestion is to do it in Python but if you wish to try another language our staff will help you if it is feasible. Here are some suggestions:

1. Create a text file that contains two columns, one column should contain the keyword, and the other the response, e.g.

Hello <break> welcome to the programming course

Date <break> it is the 13th July 2012

Name <break> my name is Fred

Weather <break> it is always sunny at Essex

In the example here the keyword is separated by the control word <break>. This makes it easier to write code to parse the data

1. Another way is to create a two dimensional array of strings or a list of tuples

Database[

[[hello], [welcome to the programming course]]

[[Date], [it is the 13th July 2012]]

[[Name], [my name is Fred]]

[[Weather], [it is always sunny At Essex]]

]

1. Once a simple ‘database’ has been created it needs to be searched using a keyword. The keyword needs to be input from the command line by the user, this can be done in Python using:

variable = raw\_input(“please enter a keyword”)

1. Once the user input has been captured it can be searched for in the database. Assuming the database has been defined as a 2D array as in (ii) using the following code will search for an occurrence of the single key word.

for i in range(4):

if Database[i][0] == variable:

print Database[i][1]

The full code listing is shown below. You should note that the code is case sensitive.

**Run the Python GUI called Idle which can be found under ‘all programs, Python31’**. Your demonstrators will walk you through this on the board

*Listing for diy\_chatterbot.py*

Database = [

['hello', 'welcome to the programming course'],

['date', 'it is the 13th July 2012'],

['name', 'my name is Fred'],

['weather', 'it is always sunny At Essex'],

]

variable = raw\_input("please enter a keyword")

for i in range(4):

if Database[i][0] == variable:

print Database[i][1]

variable = raw\_input("press enter to terminate")

Things to think about:

1. Put the input into an infinite loop, conversations are more than one word
2. increase the size of the database
3. allow the input of sentences rather than single words
4. solve the problem of case sensitivity
5. solve the problem of not all words matching in a sentence
6. solve the problem of spelling mistakes and typos
7. Employ voice recognition and synthesis
8. identify important and non-important words

Here is a modified version which allows multiple questions and the keywords are more meaningful:

Database = [

['hello', 'welcome to the programming course'],

['what is the date', 'it is the 13th July 2012'],

['what is your name', 'my name is Fred'],

['what is the weather', 'it is always sunny At Essex'],

['how old are you', 'mind your own business, how old are you?']

]

while 1:

variable = raw\_input("> ")

for i in range(5):

if Database[i][0] == variable:

print Database[i][1]

The next stage performed in chatterbots, which you are not expected to do is sentence decomposition, which breaks a long sentence down in to manageable chunks for the piece of software

The Turing Challenge and the Loebner Prize are now within your grasp .................