

Assignment 5

Electives Advisory System

With Natural Language Interface using NLTK library

Mohammad Atif Quamar

B.Tech, CSB

2020523

Explanation

- The elective advisory system uses the PorterStemmer module provided by the NLTK library in python.
- The system takes input in the form of a paragraph and converts the keywords into their root word, and tries to find similarities with the known words in our database, using stemming algorithms
- Stemming algorithms are provided as a package and can be directly used by importing PorterStemmer from the nltk.stem library.

Steps to run

- Run the program by typing:-
python electives_nltk.py

Assumption

Here we are going to make an assumption that the information about the user's branch would be in the first sentence, the branch of engineering the user wants to explore would be in the second line, and the specific interest of the user in a particular field (e.g:- Machine Learning, VLSI Design, etc.) would be in the third sentence.

Sample Outputs

Input 1

I am from the Computer Science and Artificial Intelligence branch at IIITD. I want to pursue courses on the currently emerging topics in the Machine Learning field. I want to study specifically in the area of Image Processing, ML, and Natural Language Proc.

```
Windows PowerShell
PS C:\Users\atif7\Desktop\Assignment 5> python -u "c:\Users\atif7\Desktop\Assignment 5\nl_electives.py"
*****
WELCOME TO ELECTIVES ADVISORY SYSTEM (NL INTERFACE)
*****
This electives advisory system will suggest you various courses based on your interests and aptitude
and also will suggest you possible and good future career choices.
Let us begin
Firstly, we will ask you some basic questions regarding your background.
What is your name? : Atif

Hi Atif, Hope that we can be of help to you.

Tell us about your branch of study here at IIITD, the branch of study you want to explore, and your specific area of inte
rest in that branch?

I am from the Computer Science and Artificial Intelligence branch at IIITD. I want to pursue courses on the currently eme
rging topics in the Machine Learning field. I want to study specifically in the area of Image Processing, ML, and Natural
Language Proc.
```

Output 1

```
*****
RECOMMENDED COURSES FOR YOU
*****
CSAI is a really good branch to pursue here at IIITD. We see that you want to pursue courses from the Artificial Intelligence/Machine Learning branch.

We have compiled a list of courses for you, which you can take in your stay here at IIITD.
Details of the courses along with their code and names are given below.

*****
CSE343/CSE543/ECE563: MACHINE LEARNING
*****
This is an introductory course on Machine Learning (ML) that is offered to undergraduate and graduate students. The contents are designed to cover both theo
retical and practical aspects of several well-established ML techniques. The assignments will contain theory and programming questions that help strengthen th
e theoretical foundations as well as learn how to engineer ML solutions to work on simulated and publicly available real datasets. The project(s) will req
uire students to develop a complete Machine Learning solution requiring preprocessing, design of the classifier/regressor, training and validation, testing
and evaluation with quantitative performance comparisons.

*****
CSE556: NATURAL LANGUAGE PROCESSING (NLP)
*****
This course will cover a broad range of topics related to NLP, including basic text processing (such as tokenization, stemming), language modeling, morpholo
gy, syntax, dependency parsing, distributional and lexical Semantics, sense disambiguation, information extraction etc. We will also introduce underlying th
eory from probability, statistics, machine learning that are essential to understand fundamental algorithms in NLP such as language modeling, HMM etc. This
course will end with more advanced topics in NLP such as stylometry analysis, sentiment analysis, named-entity disambiguation, machine translation etc. The
term projects will provide opportunity to the students to get hands-on experience on designing different real-world NLP models.

*****
CSE340/CSE540/ECE340: DIGITAL IMAGE PROCESSING
*****
This Course includes fundamental theories and algorithms of digital image acquisition, color representation, sampling and quantization, frequency transform
via DFT, enhancement, filtering, restoration, analysis, feature extraction, segmentation, morphological transform, and compression. Practical applications s
uch as JPEG compression will be covered.

PS C:\Users\atif7\Desktop\Assignment 5> |
```

Input 2

I am from the Computer Science and Biosciences branch at IIITD. I want to pursue courses on the currently emerging topics in the Biology field. I want to study specifically in the area of Neurosciences and Image Processing.

```
Windows PowerShell
PS C:\Users\atif7\Desktop\Assignment 5> python -u "c:\Users\atif7\Desktop\Assignment 5\nl_electives.py"
*****
WELCOME TO ELECTIVES ADVISORY SYSTEM (NL INTERFACE)
*****
This electives advisory system will suggest you various courses based on your interests and aptitude
and also will suggest you possible and good future career choices.
Let us begin
Firstly, we will ask you some basic questions regarding your background.
What is your name? : Atif

Hi Atif, Hope that we can be of help to you.

Tell us about your branch of study here at IIITD, the branch of study you want to explore, and your specific area of interest in that branch?

I am from the Computer Science and Biosciences branch at IIITD. I want to pursue courses on the currently emerging topics
in the Biology field. I want to study specifically in the area of Neurosciences and Image Processing.
```

Output 2

```
*****
RECOMMENDED COURSES FOR YOU
*****

CSB is a really good branch to pursue here at IIITD. We see that you want to pursue courses from the BioSciences branch.

We have compiled a list of courses for you, which you can take in your stay here at IIITD.
Details of the courses along with their code and names are given below.

*****
BIO534: INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
*****

This introductory neuroscience provides basic understanding of neuronal systems and their respective mathematical models that describes the behavior of the neurons under various conditions. The aim of this course is to encourage Computational biology students to diversify into the area of neuroscience. This course is not about neural networks and machine learning, but about the use of the tools of dynamical systems theory to understand oscillatory properties of single cell neurons. Nonlinear ODE and PDE models will be constructed, analyzed and simulated using MATLAB to understand different firing patterns of the neuronal systems under normal and pathological conditions.

*****
CSE340/CSE540/ECE340: DIGITAL IMAGE PROCESSING
*****

This Course includes fundamental theories and algorithms of digital image acquisition, color representation, sampling and quantization, frequency transform via DFT, enhancement, filtering, restoration, analysis, feature extraction, segmentation, morphological transform, and compression. Practical applications such as JPEG compression will be covered.

PS C:\Users\atif7\Desktop\Assignment 5> |
```