

Applied Artificial Intelligence

CS-514

Project 2 – Vacation Planning Assistant

Using Fuzzy Jess

Sherlock

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Abstract:

Vacation Planning Assistant is an expert system that uses fuzzy jess to help the user decide on the next road trip spot. One could imagine this assistant to help us out in a situation of decision fatigue where one could just describe the logistics and other constraints to the system while letting the system suggest a location for you.

The system takes parameters such as number of days you have in your mind, the budget, the kind of accommodation the user looks for as input to predict a suitable place after analyzing the places near Chicago known to it.

The inputs given to the system are fuzzy and not precise values. The closest word describing the preference of the user is used to narrow down a spot.

Features:

The system takes the following attributes as input.

- The number of days the user is planning to go on the vacation. The system requires the user to choose between two options – few or many depending on the days the user has at his/her disposal.
- A rough idea of the budget is then requested by the system. This is a very important criteria trip is useful in identifying the location that is feasible for the user's requirement. The user is expected to have either a small or a large budget.
- Finally, the system asks the user about the accommodation preference of the user. This helps the system in predicting whether the plan would be feasible within the user's budget. Again, the user is expected to choose from one of the given options – cheap vs a costly option. The underlying assumption here is that there might be Airbnb available which could be cheaper by a significant amount when compared to star hotels which are costlier avenues.
- The amount of distance the user is willing to travel in the trip is requested by the system. The user can vaguely choose between the two categories – near or far.

Variables & Rules:

The input taken from the user (4 parameters) are represented as fuzzy variables and it is mapped to various other fuzzy variables which are defined based on some constraints. After processing, the user is provided with the defuzzied output that indicates the spot chosen for the user based on the input conditions. A total of 16 rules are derived from the 4 input parameters which has 2 options each.

User Manual:

- Set up jess in eclipse by installing the required plugins.
- Create a new project and copy vacationplanner.clp into it.
- Include the JAR file fuzzyJ-2.0.jar in the build path.
- Set up the Run Configuration – change the Jess main class field to “nrc.fuzzy.jess.FuzzyMain” from “jess.main”.
- If this is not configured properly, jess might show an error which throws a nested exception. Doubly ensure that the run configuration is pointed to the right main class before attempting to run the program everytime.

Scope and Assumption:

- The base station is assumed to be Chicago.
- Only road trips are considered for now.
- The number of days only is required for now, but whether it is a weekend and how the prices vary during weekends is not considered.
- The places suggested is not unique. Same place could be described.

Going Further

- The number of people going on the trip could be considered as a parameter.
- The fact that the user could own a car or rents a car could be analyzed before arriving at the budget that is available for other activities.
- Include other modes of transport like flight or train.
- Account climatic variation before suggesting location.
- Relate number of people to budget by involving factors such as car size, family, kids etc.

Test Cases:

Name: Lori
No of days: few
Budget: small
Distance: far
Accommodation Type: costly
Output -> Geneva, Wisconsin.

Name: Sherlock
No of days: few
Budget: small
Distance: near
Accommodation Type: cheap
Output -> Rockford, Illinois.

Name: Sam
No of days: few
Budget: large
Distance: far
Accommodation Type: cheap
Output -> Door County, Illinois.

Samples:

```
Jess, the Rule Engine for the Java Platform
Copyright (C) 2008 Sandia Corporation
Jess Version 7.1p2 11/5/2008
```

```
This copy of Jess will expire in 26 day(s).
May I know your name? Lori
```

```
*****
Hello, Lori. I'm your Vacation Planning Assistant.
I can help you decide on your next vacation spot.
Please answer the following questions with one of the options given in the [].
*****
```

```
For how many days are you planning to go? [few | many]
few
Let's talk about money.Which word best describes your budget? [small | large]
small
How much do you want to travel? [near | far]
far
what kind of accomodation would you prefer? [cheap | costly]:
costly
I would suggest you to go to,
Lake Geneva, Wisconsin.
```

```
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```

```
This copy of Jess will expire in 26 day(s).
May I know your name?Sherlock
```

```
*****
Hello, Sherlock. I'm your Vacation Planning Assistant.
I can help you decide on your next vacation spot.
Please answer the following questions with one of the options given in the [].
*****
```

```
For how many days are you planning to go? [few | many]
few
Let's talk about money.Which word best describes your budget? [small | large]
small
How much do you want to travel? [near | far]
near
what kind of accomodation would you prefer? [cheap | costly]:
cheap
I would suggest you to go to,
Rockford, Illinois.
```

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This copy of Jess will expire in 26 day(s).
May I know your name?Susie

Hello, Susie. I'm your Vacation Planning Assistant.
I can help you decide on your next vacation spot.
Please answer the following questions with one of the options given in the [].

For how many days are you planning to go? [few | many]
many
Let's talk about money.Which word best describes your budget? [small | large]
small
How much do you want to travel? [near | far]
near
what kind of accomodation would you prefer? [cheap | costly]:
costly
I would suggest you to go to,
Indianapolis, Indiana

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This copy of Jess will expire in 26 day(s).
May I know your name?Sam

Hello, Sam. I'm your Vacation Planning Assistant.
I can help you decide on your next vacation spot.
Please answer the following questions with one of the options given in the [].

For how many days are you planning to go? [few | many]
few
Let's talk about money.Which word best describes your budget? [small | large]
large
How much do you want to travel? [near | far]
far
what kind of accomodation would you prefer? [cheap | costly]:
cheap
I would suggest you to go to,
Door County, Wisconsin.