University Application Assistant

TOOL FOR AUTOMATED APPLICATION VALIDATION

DEADLOCK

Table of Contents

1

ABSTRACT

The aim of the project is to provide a rule based assistant that can help serve as a consultant to analyze an applicant's profile. The motivation behind the project lies in the struggle an applicant faces while deciding if he should apply for a University's masters' program or not. The assistant is a rule based expert system that judges an applicant's application on several criteria and gives insight into how he or she would fare in the whole process.

FEATURES:

1. The system asks the applicant to input all the required details for the university application, like GPA, Work experience, Research papers published, GRE and TOEFL scores etc.
2. It first checks if the GPA is above the minimum requirement or not.
3. It then checks if the applicant's intended course of study is offered by the University or not.
4. Next it further analyzes the applicant's academic background by enquiring if he or she has any pending backlogs. Existence of backlogs is bad for the profile.
5. It analyzes if the applicant has any professional or research background.
6. An international student has a decreased chance of getting an admit as usually a domestic student gets preference in the whole process. That is analyzed here too.
7. At the end, the assistant validates the profile on the basis of the GRE and TOEFL scores along with the Letters of Recommendation and statement of Purpose.
8. It verifies all the details and informs the applicant if any facet of the application needs improvement and if everything is in order, it tells the applicant to move forward with the application.
9. NOTE: The assistant is just a boilerplate proof-of-concept and serves as a preliminary scan of the profile. It can help eradicate the cumbersome process of going through the FAQs and what-not while looking for information on the application, but cannot tell the psyche of the board behind their decisions.

RULES AND DESCRIPTION

There are 2 templates described in the code: One for the applicant and one for the University which are as follows:

1. **Applicant**

   (deftemplate applicant

   (slot name)

   (slot age (type INTEGER))

; Applying for course (Right now limited to CS, ECE, Civil, Mech)

(slot major)

; Intended term of application

(slot term (allowed-values fall spring))

; GPA in Bachelors out of 4.0

(slot gpa (type FLOAT))

; Any pending backlogs?

(slot backlog (allowed-values Y N))

; Job experience if any in terms of assistantship, internships, volunteer work etc.

; Input in the form of Number of years

(slot workxp (type INTEGER))

; To determine if the applicant has research experience and publishings.

(slot researchxp (allowed-values Y N))

; International or domestic applicant)

(slot international (allowed-values Y N))

;Score in GRE

(slot gre (type INTEGER))

; TOEFL score (enter 120 if domestic student)

(slot toefl (type INTEGER))

; Letter of Recommendation

(slot lor (type INTEGER))

; Statement of purpose

(slot sop (allowed-values Y N))

)

2. **University**

(deftemplate university

  (slot name)

  ; Departments in School of Engineering

(slot department (allowed-values CS ECE Civil Mech))

;Total annual fee for the program

(slot totalfee (type INTEGER))

; Number of Recommendation letters required

(slot reqlor (type INTEGER))

; Seat available for the applicant or not

(slot seatavailable(allowed-values Y N))

; Available terms in the university

(slot term (allowed-values fall spring))

)

Now, in total there are 13 rules in the program:

1. **initial:** Prints all the information of the applicant.
2. **checkGPA:** Verifies if the GPA is above the threshold
3. **checkMajor:** Checks if the applicant's intended major is offered by the University.
4. **backlogCheck:** Verifies that the student has no active backlog in undergrad.
5. **workxpCheck:** If the applicant has no job experience then he is notified that getting in might be difficult but he can still apply.
6. **researchxpCheck:** If the applicant has no job experience then he is notified that getting in might be difficult but he can still apply.
7. **nationalityCheck:** To inform the applicant that if he or she is an international applicant getting in will be tough.
8. **greScoreCheck:** Checks if the student meets the University's minimum requirement.
9. **toeflScoreCheck:** Checks if the student meets the University's minimum toefl requirement.
10. **lorCheck:** The University requires that a student submits atleast 3 Letters of Recommendation.
11. **sopCheck:** To verify if a student has successfully submitted his statement of purpose.
12. **submitApp:** If everything is in order, portal advices the student to submit his/her application.
13. **printFacts:** To print all the facts.

USAGE MANUAL

Copy the deadlock.clp file into the bin folder inside Jess directory.

Open JESS and execute the following command:

(batch "deadlock.clp")

The program has the following test case embedded in it:

(assert (applicant (name "John Doe")

       (age 21) (major CS) (term fall) (gpa 3.5) (backlog N)

       (workxp 3) (researchxp Y) (international Y) (gre 321) (toefl 112) (lor 3) (sop Y)))

(run)

In case the grader wants to test different values, he or she can tweak the values accordingly which conform to the allowed values of the slots. Please take care to run only one assertion at a time.

SAMPLE RUNS

RUN #1

The above assertion yields the following result:


```
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 1820 day(s).
Jess> (batch "deadlock.clp")
********************Welcome to University Application Consultancy Services********************
Hey John Doe. Thank you for reaching out to us
Just to be sure, here is the information you provided to us
Age: 21
Intended major: CS
Intended term: fall
GPA in undergrad: 3.5
Backlogs in undergrad: N
Work Experience: 3 years
Research Experience: Y
International or Domestic Student?: Y
GRE Score: 321
TOEFL Score (Auto-filled to be 120 if you are a domestic applicant): 112
Letter of Recommendation: 3
Statement of Purpose: Y
The international intake at our university is really low and competition will be really tough.
You are eligible to apply for the Masters program at our University
f-0   (MAIN::initial-fact)
f-1   (MAIN::applicant (name "John Doe") (age 21) (major CS) (term fall) (gpa 3.5) (backlog N) (workxp 3) (researchxp Y)
 (international Y) (gre 321) (toefl 112) (lor 3) (sop Y))
For a total of 2 facts in module MAIN.
13
Jess>
```

RUN #2

If we tweak the assertion to:

(assert (applicant (name "John Doe")

      (age 21) (major IT) (term fall) (gpa 2.5) (backlog N)

      (workxp 3) (researchxp N) (international Y) (gre 321) (toefl 112) (lor 3) (sop Y)))

(run)

The output is as follows:

```
This copy of Jess will expire in 1820 day(s).
Jess> (batch "deadlock.clp")
*********************Welcome to University Application Consultancy Services*********************
Hey John Doe. Thank you for reaching out to us
Just to be sure, here is the information you provided to us
Age: 21
Intended major: IT
Intended term: fall
GPA in undergrad: 2.5
Backlogs in undergrad: N
Work Experience: 3 years
Research Experience: N
International or Domestic Student?: Y
GRE Score: 321
TOEFL Score (Auto-filled to be 120 if you are a domestic applicant): 112
Letter of Recommendation: 3
Statement of Purpose: Y
 We regret to inform you that you do not satisfy the academic performance criteria required.
We are sorry but our university does not offer the course you intend to apply for.
We see that you have no research experience. While this may not necessarily be a red flag on your profile and you can st
ill apply, getting in may be difficult since the application process is highly competitive.
The international intake at our university is really low and competition will be really tough.
You are eligible to apply for the Masters program at our University
f-0    (MAIN::initial-fact)
f-1    (MAIN::applicant (name "John Doe") (age 21) (major IT) (term fall) (gpa 2.5) (backlog N) (workxp 3) (researchxp N)
 (international Y) (gre 321) (toefl 112) (lor 3) (sop Y))
For a total of 2 facts in module MAIN.
13
Jess>
```

6