Approach to Design of Curriculum

4.1 Introduction

In earlier chapter we discussed what are the technologies involving with our solution. As we discussed earlier the main idea of this project is to create autonomous curriculum design system using Multi Agent technology. Multi Agent technology is a growing technology in today world. This chapter will provide vivid description on how the technology is used to solve the problem referring to users, inputs, outputs, process and technology that implements the solution.

4.2 Users

Curriculum designing process happens through the negotiation among expert in the field of curriculum design or curriculum revision. Mainly the academic staff members such as Senior Lectures, Junior Lecturers and etc are involving for this process. Administrative staff also involve for some part of the process. They spent considerable amount of effort in designing the curriculum and it takes several days or weeks or months to complete the task in a successful manner. Therefore the potential solution for this problem would be automating the process of curriculum design. Therefore especially this system designs to use by the academic members by considering their needs.

By considering their needs it has been design and developed the graphical user interface using Java programming language. Here it displays different curriculums in the faculty of information technology and the curriculums are display in a tabular manner. It provides facilities to view and edit each course module details.

4.3 Input

In real world, curriculum design start with the ones proposal of new curriculum or reviewed curriculum. Therefore as an input request agent will receive the new or reviewed curriculum through the user. This may contains course module detail in a particular curriculum such as level, module code, module title, credits, lecture hours, lab hours and prerequisites, outline syllabus, and learning objective for that course module.

4.5 Curriculum Designing Process.

In the real world curriculum design process once proposal of curriculum receives; start the process of curriculum design. When changing the number of credits of a particular module check whether the changes are effect for the level credit requirement, number of hours for the lecture, number of hours for the lab or tutorials and etc. According to the outline syllabus it should decide whether there should be prerequisites for that module. Also there should not be equivalent modules within same curriculum. According to the number of credits, amount of module content should be change also final design of the curriculum must be same. Therefore it has been assign agents for each task and developed as a Multi Agent System. By considering all those requirements proposes an approach to solve the problem of curriculum design as follows. Initially there are Resource Agents such as credit agent, prerequisites agent, level agent and subject agent, Request Agent, Ontology and the Message space. Upon request agents will create. Checking the all requirements such as credit details, prerequisites, equivalent modules, and etc, propose most appropriate solution through the negotiation among agents. Those agents have been developed using JADE.

Inside the educational systems there are many terms so there should be proper definition to each term accepted by the all parties in a particular educational institution. So there will be no confusion or ambiguity in communication. This issue is also applicable to activities and there should be proper definition such as what are the pre conditions to initiate an activity what are the steps involve and what are the

acceptable outputs. To handle these problems we use ontological approach. Using ontology we can define what are the terms involve and there meanings. Then it can define what are the actions and their relations using ontology. Protégé provides proper support to implement ontology in an easiest way. There for it has been used protégé to implement the ontology. Ontology been generator provides facility to convert the Protégé ontology into JADE.

In a particular institution there may be huge amount of data about each curriculum such as course module details, credit details, level requirements and etc. so it needs to store all the information related to those details. For that purpose as a part of ontology it has been used the Microsoft access database.

4.6 Output

The aim of a curriculum design process is create well balanced curriculum. To achieve this aim all the agents are communicate each other and query the needed information through the ontology and take the decisions accordingly. Finally the curriculum design system will give the most appropriate solution. According to the module content this will decide whether it is a prerequisites or a equivalent module.

4.7 Features

There are deferent features available in this solution. As we discussed earlier in the normal curriculum design process it takes several days or months to produce or review a curriculum.

- This system intends to design curriculum within very less time period with user friendly manner. Therefore academic members can accumulate their valuable time to some other academic works.

- This system enables a more cost effective flexible approach to curriculum design, administration and maintenance.

4.8 Summary

In this chapter we discussed a general over view of our system with related technologies we used. Here we identified three main arts in our system to interact with user we used graphical user interface. Then we have our core agent environment. Then the ontology with relational database which store all the data. Next challenge is the preparation of appropriate system designed for development of proposed autonomous curriculum design system.