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Project Proposal

Course: Artificial Intelligence (CSC 215)

Title: Inference Engine Using Fuzzy Logic

Type of the project: Implementation of Inference Engine Using Fuzzy Logic

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Description:

An Inference engine is one of the main components of expert systems. It applies various logical rules to the base knowledge and concludes new information from it. The proposed system will take the goal as an input. It will work on backward chaining by deducing what facts could make the goal assertion true. The idea of this project is to implement inference engine using Fuzzy Logic and Natural Language Processing with rules.

The main focus of this project is on classification and sequential inferences. We will apply Natural Language Processing, fuzzy set conversions and inference rules to deduce conclusions from input statements.

The inference engine should be able to deduce relations among input statements by applying inference rules and map it as an output result. All the transitions, such as inputs to the inference engine, inference engine to output would use fuzzifications techniques. We would like to explore 2 types of fuzzy approaches, that is, Mamdani [1] and, Sugeno [2]; to see which technique is more suitable and address this domain more accurately.

The primary application of this system could be in a domain such as automated chatbots and, robotics.

This system can be further developed to respond to question/answer type of conversations deducing from knowledge gathered from past conversations and predicting the answers of the questions asked.

References:

[1]   athena.ecs.csus.edu/~gordonvs/180/WeeklyNotes/03A_FuzzyLogic.pdf

[2]   www.cs.princeton.edu/courses/archive/fall07/cos436/HIDDEN/Knapp/fuzzy004.htm

[3]   en.wikipedia.org/wiki/Inference_engine