

CS 335-31 - Artificial Intelligence

Exam 1

March 11, 2004

1. Explain, in a couple of sentences, what an expert system is. Give an example of an application for an ES
2. How can an Artificial Neural Network be used to complement an Expert System?
3. What are the main differences between Genetic Algorithms and Evolutionary Strategies?

4. Define a set of at least five (5) rules and show an instance of forward chaining (for simplicity limit each rule to the form “If A and B THEN C”

5. What are the main conflicts that can arise in an expert system when the number of rules becomes large? How can that conflict be solved?

6. What is the main formula to apply in Bayesian Reasoning? Given the following rule:

IF A is True

THEN X is True (with $p = .45$)

If we know that $P(A/X) = .62$, $P(A/\neg X) = .38$, and $P(X) = .60$ what is the value of $P(X/A)$?

7. What are the main characteristics of a fuzzy set? Can you define a crisp variable and “convert” it into a fuzzy one?

8. What is a hedge? give three examples and indicate whether the hedge enhances or compresses the fuzzy subset

9. Can you enumerate all the steps of a fuzzy expert system?

10. Select a domain for an expert system. Define each of the steps that will be required to create it. Sketch an example of types of rules to be used (related to your selected domain). How would you handle uncertainty? why?