CSAE 42: Artificial Intelligence

Instructor: Dr. Suraiya Jabin

Marks weightage: 5 (towards Theory Internal Assessment)

Note:

1. Collaborations on assignment works are not permitted.
2. Cheating and any other anti-intellectual behavior, including giving your work to someone else or downloading solution through Internet or copying your answers from your room mate or from back of the book, will be dealt with severity or may result in evaluation zero.
3. Assignments after the due date would not be accepted and will result in evaluation zero out of five.

Given on: Tuesday, May 19, 2020
Due on: Monday, May 30, 2020

Topic: Non-monotonic reasoning and Reasoning Under uncertainty

1. What is uncertainty? Explain Bayes theorem. Compare Bayesian reasoning and certainty factors. The probability of breast cancer is 1% for a woman at age forty who participates in routine screening. If a woman has breast cancer, the probability is 80% that she will get a positive mammography. If a woman does not have breast cancer, the probability is 9.6% that she will also get a positive mammography. A woman in this age group had a positive mammography in a routine screening. What is the probability that she actually has breast cancer?

2. Explain the following operators and how they are useful:
Unless Operator, Modal Operator, Default Operator

3. There is a specific type of cancer which exists for 1% of population. The probability of a test being positive is 0.9 given that a person has cancer. And the probability of that test coming out positive given that we don't have this cancer is 0.2. A person just received a positive test, what is the probability that he has this cancer?

4. How does Bayesian rule support measure of belief? In manufacturing a product, 83% of the products that are produced are not defective. Of the products inspected, 11% of the good ones are seen as defective and not shipped whereas only 6% of the defective products are approved and shipped. If a product is shipped, what is the probability that it is defective?