**ITCS451, Semester 1/2024**

**Bayesian Network Project**

This is a group assignment. Work in a group of 4 students.

**Date Due:** 30 Nov 2024, 23:55 (Submit through MyCourses using the project submission form and following the directions at the end of this document. Late submissions not accepted.)

Create a Bayesian network for a problem of your choice. The network should have a minimum of 10 and a maximum of 15 nodes. (Note that the demo version of Netica does not allow you to save a network with more than 15 nodes.) You may make up the probabilities in the conditional probability tables (CPTs) yourself. These made-up CPT probabilities must at least qualitatively make sense. Do not in any way make use of networks that you can find on the web or from previous years – this will be considered plagiarism.

Extra credit of 10% of the score on this project will be given to groups that use real data. You can either learn the CPTs from raw data or you can use available published statistics. Both are counted as using real data. If you use real data, you must tell us exactly where it came from to get the extra credit.

**Submit:**

1. Briefly describe the problem you are modeling.
2. Are you using real data? (10% extra credit)
   1. Describe the data and clearly state the source. Give the url or the full reference to the published article(s) from which it came.
   2. Indicate if you made any modifications to your data and state clearly what they were.
3. Description
   1. General description of your network.
   2. A screenshot showing your Bayes net.
4. An explanation of what each node in your network represents.
5. Two examples of inference: Enter some evidence and show the updated probabilities of the main hypothesis node(s). Explain what each example shows so we can see that what is coming out of your network makes sense.
6. Your Netica network file (so we can test it). Make sure the file can be opened in Netica.

**Guideline for project submission:**

* Put your Netica network file and your answers in the submission form into **one zip file and submit that**. It is your responsibility to make sure that your network file can be run in Netica. If the Netica file you submit cannot be run, you will get no points for the project. Upload only **one copy of the project per group**.