• Reading: Chapters 9-10

• This and the next homework will consist of relatively short programming assignment. Assume you are given either a Bayesian network (structure + CPDs).

  1. Implement topological sorting (Algorithm A.1)
  2. Implement graph moralization for directed (Bayesian) networks.
  3. Implement maximum cardinality elimination ordering (Algorithm 9.3).
  4. Implement another heuristic for elimination ordering (your choice of heuristic).
  5. Construct maximal cliques using elimination ordering from the previous item.
  6. Construct a clique tree using a maximum spanning tree (MST) algorithm (see page 375). You can use either Kruskal’s or Prim’s algorithm for MST.
  7. Implement calibration using belief propagation.
  8. Implement posterior probability estimation for all univariate posterior marginals.

To test your implementation, we will use datasets from [http://compbio.cs.huji.ac.il/Repository/](http://compbio.cs.huji.ac.il/Repository/) in particular Alarm dataset.