Bayes Network Toolbox for Matlab
installation, introduction

AE4M33RZN course

1 Bayes Net Toolbox for Matlab

1. Download Bayes Net Toolbox for Matlab
   - https://code.google.com/p/bnt/,
   - click *Download zip file*,
2. unzip it in a home directory,
3. run Matlab
   - there are more Matlab installations, any of them shall in principle work (e.g., R02015b fails in draw_graph function, use FEL installation when running with a non CTU IP),
4. set the toolbox path
   - File → Set Path,
   - Add with Subfolders . . . /home/.../bnt/
     (due to the access rights the path will not save),
5. test its functionality

   >> test_BNT,
   - (finite → isfinite in ffa.m and mfa.m).
6. BNT help page is
   - http://bnt.googlecode.com/svn/trunk/docs/usage.html.

2 Inference – FAMILY example

1. Download *family_out.m* from the courseware page
   - the file formalizes FAMILY example discussed during the introductory lecture,
   - it makes a part of *bnt_intro.zip*,
2. open the file in Matlab editor and learn the basic commands to create and use BN,

3. using inference by enumeration manually calculate the conditional probabilities
    - the dog has bowel problems given it is heard barking,
    - family left the house given the dog is out and has bowel problems,
4. get the same probabilities automatically using various types of Matlab inference engines
    - their list is available at http://bnt.googlecode.com/svn/trunk/docs/usage.html#engines,
    - the details will be given in the second and third GPM lectures.
5. compare the resulting probability values, get them to match,
6. update the network
    - change parameters first, modify also the structure as the next step,
    - observe the influence of updates on inference carried out earlier.