

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 work (R02011b+Simulink actually checked),
4. set the toolbox path
 - File → Set Path,
 - Add with Subfolders ... /home/.../FullBNT-1.0.4/
((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.