PRE-CONGRESS WORKSHOP

HW11 – Bayesian reasoning in the framework of Bayesian Networks

Organiser: Tomas Furst
Type: Half Day Workshop, Lecture
Date & Time: Tuesday, 10 September (14:00-18:00)

Bayesian networks represent a universal framework for almost any inference tasks.
BN is a network of nodes connected by directed links such that the resulting graph contains no loops. The nodes represent random variables (e.g. an action of a suspect, or the presence of a trace) whose state may be either known or unknown.
The links represent causal relations (e.g. the presence of the suspect causes the occurrence of a trace). In each node, a probability distribution conditional on the parent nodes is given (e.g. the presence of a suspect leads to the occurrence of a particular trace with the probability of 0.7). The network is used for making inference about unobserved nodes (e.g. on the activity level on hierarchy of propositions) conditional on the values of observed nodes (usually the evidence nodes).

In the workshop, fundamentals of Bayesian inference will be explained and various examples of their usage in forensic context will be given. The examples will be illustrated in freely available software (unbbayes.sourceforge.net), so that the participants may explore the behavior of the network themselves. The examples will go from a really trivial case all the way to a rather involved illustration of BN usage in forensic practice.