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Bayesian Networks Sources - a roadmap

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03.17.1998

http://www.auai.org The **Association's for Uncertainty in AI homepage**. A comprehensive, well-organized listing of belief networks resources. Includes conference proceedings, mailing lists, who's who, listings of UAI related companies and research groups, demos, biblyographies, data repositories, pointers to other resources relevant to related topics as statistics and machine learning.

Demos for downloading

http://www.norsys.com The Norsys Corporation library of belief networks and decision networks. Software for PC and Mac.

http://www.hugin.dk The HUGIN Ltd. site. Contains also a description of the HUGIN system, the best known commercial general purpose belief network system, a *very* short tutorial and a list of other belief networks resources and applications.

Free software The Microsoft Bayes Net construction and inference tool MSBN. Available upon request from http://www.research.microsoft.com/research/dtg/#Projects.

Books

Pearl,88 Judea Pearl,*Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference*, Morgan Kaufman Publishers, 1988. A seminal work for this field. The first part contains an in-depth answer to the question *why probability ?*, i.e. why is probability theory preferable to other formalisms in dealing with uncertainty. A good formal and intuitive introduction of the notions of probabilistic independence and of the directed and undirected graphical models as means of representing independence relationships. Also an introduction to utility theory and influence diagrams.

Jensen, 1996 Finn V. Jensen, *An introduction to bayesian networks*, Springer, 1996. A tutorial introduction to the basics of bayesian networks models containing the state of the art algorithms for inference.

Lauritzen,1996 Steffen L. Lauritzen, *Graphical models*, Clarendon Press, Oxford, 1996. A more formal and mathematically dense introduction to the world of graphical models. Recommended to those who want to pursue research in related topics.

Tutorial papers on learning bayesian network models

Heckerman,1995 David Heckerman, *A tutorial on learning bayesian networks*, Microsoft Research Techinical Teport MSR-TR-95-06, 1995. A tutorial, unitary introduction to the state of the art concepts and methods for bayes net learning. Focuses on the specification of prior knowledge and on structure learning. It assumes almost no previous knowledge of belief networks but the material reaches a quite abstract mathematical level. Available from http://www.research.microsoft.com/research/dtg/#Projects.

Krause,1998 Paul J. Krause, *Learning probabilistic networks*, 1998. A somewhat less formal tutorial, still having much in common with (Heckerman,1995). Available upon e-mail request from the author (krause@prl.research.philips.com).