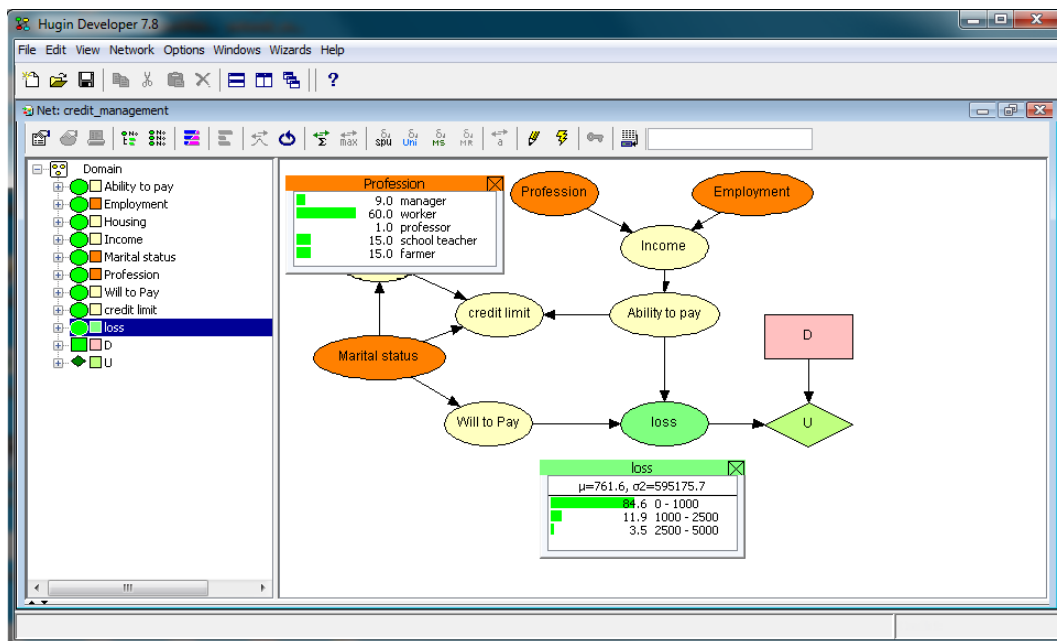


An ideal tool for developing advanced model-based decision support systems

HUGIN is a software package for developing and deploying decision support systems for reasoning and decision making under uncertainty. HUGIN software is based on Bayesian network and influence diagram technology. Bayesian networks and influence diagrams are widely used for supporting decision making under uncertainty.

A Bayesian network or influence diagram is a graphical modeling tool for knowledge representation and inference under uncertainty. The knowledge base can integrate information from a range of different sources including literature, subjective estimates and historical data.

The knowledge base describes dependence and independence relations between a set of variables where the dependence relations are quantified using probability distributions. The combination of a knowledge base and an efficient inference engine makes it possible to support reasoning and decision making under uncertainty in even highly complex domains.



The HUGIN Graphical User Interface with an influence diagram representing a fictional decision problem related to credit risk management

HUGIN software tools

The HUGIN software package consists of the HUGIN Decision Engine (HDE), a Graphical User Interface (GUI) and Application Program Interfaces (APIs) for the easy integration of HUGIN into applications.

The HUGIN Decision Engine utilizes breakthrough algorithms discovered by a Danish research team, and is recognized as one of the most efficient and robust inference engines on the market.

Other HDE implementations utilizing Bayesian networks and influence diagrams include object-oriented modeling, learning from data with both continuous and discrete variables, value of information analysis, sensitivity analysis and data conflict analysis. The HDE also supports function nodes for post-propagation calculations as well as easy web-deployment.

Advantages of HUGIN

- Combines historical data and knowledge of experts
- Computes with missing observations
- An intuitive, graphical communication tool
- Easy model integration and maintenance

HUGIN Products

- **HUGIN Explorer** consists of a comprehensive, flexible and user-friendly GUI. The GUI contains a graphical editor, a compiler and a runtime system for constructing, maintaining and using knowledge bases utilizing HUGIN technology.
- **HUGIN Developer** contains the HUGIN GUI, the HUGIN Decision Engine, and APIs for the major programming languages C, C++, Java, .NET and an ActiveX-server for e.g. Visual Basic as well as a Web Service API.
- **HUGIN OEM** is a contract for customers distributing products and services utilizing HUGIN technology, including the right to sublicense the technology as part of their products and services.

HUGIN Services

- **Support Pack** is available for all software packages and gives access to new releases and product updates, discounts on training and consulting, etc
- **Training.** HUGIN holds a 3-day off-site training course on Bayesian networks and influence diagrams, their functionality, construction and usage, as well as on-site training in HUGIN tools.
- **Consulting.** HUGIN consultants have extensive experience in Bayesian network and influence diagram technology and can provide expert advice on how the technology can be utilized in a particular area or line of business.

System Requirements

Windows:

- OS: Microsoft Windows 2000/XP/Vista/7/8 (x86/x64)
- CPU: Intel Pentium II/Pro or newer, AMD Athlon or newer

Solaris:

- OS: Solaris 10 (SPARC, x86/x64)
- CPU: Sun UltraSPARC or newer, Intel Pentium II/Pro or newer, AMD Athlon or newer

Linux:

- OS: Red Hat Enterprise 5 and compatible distributions (x86/x64)
- CPU: Intel Pentium II/Pro or newer, AMD Athlon or newer

Mac 32-bit/64-bit:

- OS: Mac OS X 10.6, 10.7, 10.8

Bayesian Network and Influence Diagram Applications

HUGIN software has been used to develop and deploy systems and solutions in a wide variety of application areas. For example:

Health Care – TREAT – a decision support system which addresses problems connected with multi-resistant bacteria and aids medical staff in choosing appropriate antibiotic treatment.

Telecommunications - Troubleshooting software to identify potential faults in complex mobile networks, reducing fault incidents and improving resolution times.

Information Processing – Information filtering and information display for time-critical decisions and fault analysis in aircraft control.

Industry – Risk assessment solution for removing offshore production facilities for COWI Denmark, diagnosis and on-board repair solutions for unmanned underwater vehicles and process control systems for wastewater purification.

Finance – FDM – an automated fraud detection solution in claims handling, Bayescredit – a default prediction solution, M-star risk compliance solution, OpRisk – an advanced operational risk management solution under Basel II Advanced Measurement Approach (AMA).

Military – Department of Defense - Using Bayesian network analysis to support centre of gravity analysis in military planning.

Agriculture – RIBAY – a web-based system for risk and finance prediction in pork farming and agriculture, and the BIOTRACER tool for tracing contamination of feed and food.



HUGIN EXPERT A/S

HUGIN EXPERT A/S is a leading provider of advanced decision support software for building decision analysis and support solutions in areas where reasoning under uncertainty is needed. Based on complex statistical models known as Bayesian networks and influence diagrams, our modeling technology has been used in virtually every area of business to develop a range of applications including fraud detection, risk analysis, data mining, prediction, diagnosis, trouble-shooting, forensic identification and safety assessment.

HUGIN EXPERT was established in 1989 by world-leading researchers in the field of graphical models. The company is strategically located in Aalborg, Denmark, one of the World's largest Bayesian Network research communities.

Today HUGIN EXPERT has a strong international profile, and HUGIN technology is used by Fortune 500 companies and premier research institutions to turn data and expertise into intelligent knowledge management solutions.

HUGIN EXPERT A/S

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