TH Aschaffenburg
university of applied sciences

Cognitive and Object-Oriented Modeling Under Uncertainties as Aspects of Artificial Intelligence in Practical Applications

Course number	7525
Hours per week:	2
ECTS:	2
Scheduled:	Winter and Summer Term
Format:	Lectures/ seminar presentations / lab practice
Examination:	60% Oral exam (20 min.) & 40% active cooperation during the seminar
Lecturer:	Prof. Dr. Galia Weidl
Objectives:	Understanding the basics of cognitive and object-oriented modeling for applications under uncertainties with lab practice on computer Seminar-type lectures for all Students, including functionality demonstration of modelling and Hands-on exercises on own computer (or on available lab computer, in case of presence lectures/seminars/labs) Free software campus site license is available (as download link) for each participating student.
Contents:	• Cognitive modeling under uncertainties as aspect of artificial intelligence in practical and technical applications • How is a model build/generated/learned? • Knowledge based modeling (encoding causal relations in the model structure) & Learning (of model parameters from data) . The combination of knowledge and data leads to probabilistic modelling under uncertainties and decision making. • Suitable sources of knowledge and data • Features and hypotheses of the problem domain • Why do we need to model uncertainties of sensors, data, computation, knowledge? How? • Data used for Learning: Variables types (boolean, numbered, interval, labeled) • What means "Data Labeling"? e.g. labeled states • Classification of hypotheses under uncertainties • Evidence as input to the Model (for Decision Making) and interpretation of classification (decision) results. • When to use cognitive modeling under uncertainties and what methods are appropriate?
Pre-requisites	Logical thinking, high school mathematics, University Mathematics I/II are of advantage, but not a requirement
Recommended Reading:	**eBook** (available from the Library of the University of Applied Sciences Aschaffenburg): Bayesian Networks and Influence Diagrams: A Guide to Construction and Analysis, 2013 Authors: Kjærulff, Uffe B., Madsen, Anders L.

	Tutorials and examples: http://download.hugin.com/webdocs/manuals/8.9/ → **Browse Help**