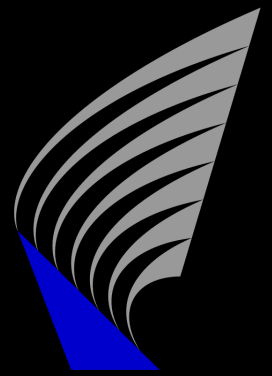
Analysing Interdisciplinarity

INTRODUCTION



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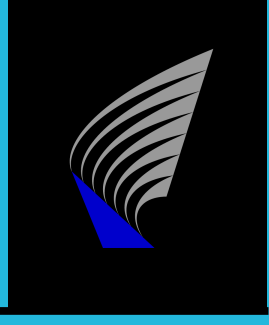
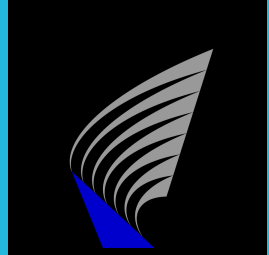
On interdisciplinarity



- Interdisciplinarity: a type of academic collaboration in which specialists from two or more disciplines work together
- Examples: research in cognitive science, science and technology studies, nanotechnology, quantum information processing, language technology and bioinformatics

Why interesting from AI point of view?



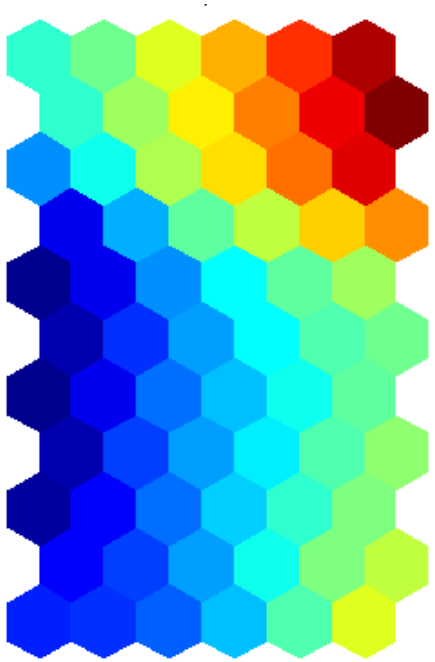
- AI is an interdisciplinary area itself; understanding the phenomena may help in developing better AI
- Intelligent means can be used to study the interdisciplinary nature of scientific research, e.g., through text mining
- Some interdisciplinary aspects of AI may be interesting for specific studies, e.g., ethics

Papers in this session

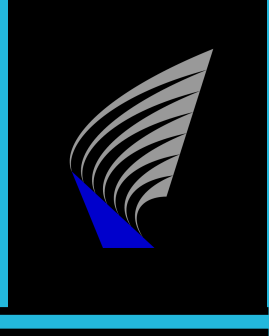
- Dodig-Crnkovic:
  Professional Ethics in Computing and Intelligent Systems
- Bruun and Laine:
  Using the Self-Organizing Map for Measuring Interdisciplinary Research
- Pöllä et al. :
  Analysis of Interdisciplinary Text Corpora

Example: Self-Organizing Map as an interdisciplinary item

- tool for data analysis
  - "clustering" (G: 166,000), "dimensionality reduction" (G: 20,700), "visualization" (G: 104,000), "data mining" (G: 81,300)
- artificial neural network
  - "unsupervised neural network" (G: 9,440), "cortex" (G: 29,600)
- component of cognitive system models
  - "semantics" (G: 22,000), "robotics" (G: 54,800), "pattern recognition" (G: 93,000)

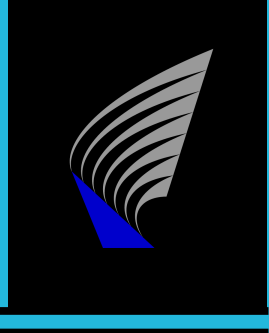


SOM as an interdisciplinary item: examples of journals (1)



Acta Electronica Sinica
Acta Metallurgica Sinica
Acta Oto-Laryngologica
Acta Psychologica
Advances in Applied Probability
Advances in Space Research
AIDS Research and Human Retroviruses
AI Expert
Analog Integrated Circuits and Signal Processing
Analytical Chemistry
Annals of Noninvasive Electrocardiology
Applied Acoustics
Applied Artificial Intelligence
Applied Bacteriology
Applied Optics
Artificial Intelligence
Artificial Intelligence in Medicine
Astronomy and Astrophysics
Atmospheric Environment
Automatica
Behavioral and Brain Sciences
Bioinformatics
Biological Cybernetics
Brain and Language
Chinese Journal of Automation
Chinese Journal of Computers
Chinese Journal of Electronics
Clinical Neurophysiology
Cognitive Science
Complex Systems
Composites Science and Technology
Computational Statistics and Data Analysis

SOM as an interdisciplinary item: examples of journals (2)



Computer
Computer Music Journal
Computer Processing of Chinese and ...
Computers and Chemistry
Computers and Electronics in Agriculture
Computers and Industrial Engineering
Computers and Industrial Engineering
Computers and Mathematics with ...
Computers and Operations Research
Computers and Security
Computers in Cardiology
Computer Speech and Language
Computer Vision and Image Understanding
Computing Science and Statistics
Connection Science
Control Engineering Practice
Cybernetica
Data and Knowledge Engineering
Data Mining and Knowledge Discovery
Decision Support Systems
Digital Signal Processing
Ecological Modelling
EEG Clinical Neurophysiology
Electrical Engineering in Japan
Electric Machines and Power Systems
Electric Power Systems Research
Electroencephalography and Clinical Neurophysi...
Epilepsia
European Journal of Economics and Social Systems
European Urology
Experiments in Fluids
Expert Systems

Modified agenda

- 09:15 – 09:25
  Honkela: Introduction
- 09:25 – 09:50
  Dodig-Crnkovic: Professional Ethics in Computing and Intelligent Systems
- 09:50 – 10:15
  Bruun and Laine: Using the Self-Organizing Map for Measuring Interdisciplinary Research
- 10:15 – 10:40
  Pöllä et al. : Analysis of Interdisciplinary Text Corpora
- 10:40 – 10:50 Discussion