



Integrated Care and Telemedicine: Any Visible Progress?

Panel, eTelemed 2013
Nice, Feb 28, 2013

Moderator: Dr.-Ing. Matthieu-P. Schapranow,
Hasso Plattner Institute, Germany

Panel Participants

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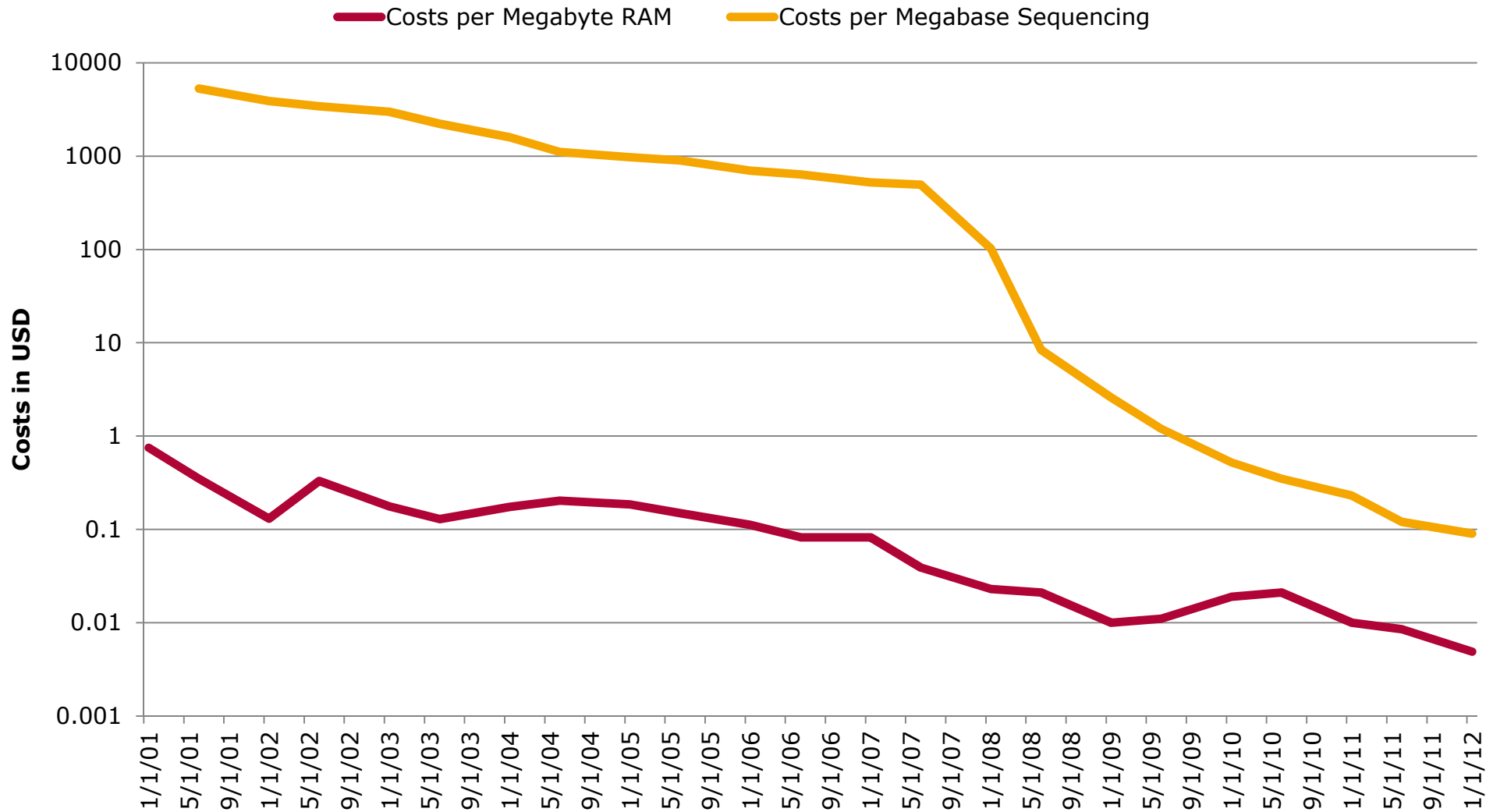
Panelists

- Mads Nyborg, DTU, *Denmark*
- Elisabeth Rakus-Andersson, Blekinge Institution of Technology - Karlskrona, *Sweden*
- Anthony Glascock, Drexel University, *USA*
- Santosh Vijaykumar, Nanyang Technological University, *Singapore*
- Adriano Andrade, Federal University of Uberlândia, *Brazil*
- Matthieu-P. Schapranow, Hasso Plattner Institute, *Germany*

Comparison of Costs


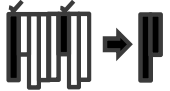
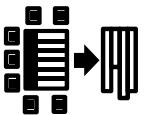



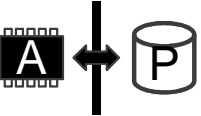
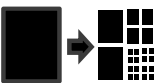
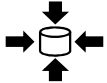

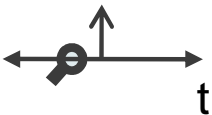
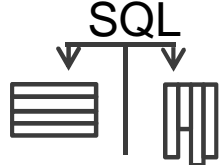




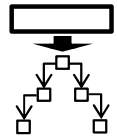


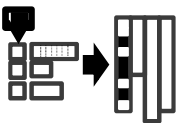

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Comparison of Costs for Main Memory and Genome Analysis



In-Memory Technology

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	Combined column and row store		Minimal projections		Any attribute as index
	Insert only for time travel		Bulk load		Multi-core/parallelization
	Active/passive data store		Partitioning		Lightweight Compression
	Dynamic multi-threading within nodes		Analytics on historical data		SQL interface on columns & rows
	No aggregate tables		Single and multi-tenancy		Reduction of layers
	On-the-fly extensibility		Object to relational mapping		Text Retrieval and Extraction
	Map reduce		Group Key		No disk

High-performance In-memory Genome Project

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- In-memory technology leverages real-time analysis of genetic variants
- Physicians can build on latest international research results at anytime
- Individual treatment decisions can be identified within minutes instead of weeks
- Patient cases can be discussed with world-wide experts via the Internet
- Even without sequencing technology hospitals and research institutes in developing countries can practice personalized medicine





NIATS



UFU

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Uberlândia

Telemedicine and Health Care: The Brazilian Panorama

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The Fifth International Conference on eHealth,
Telemedicine, and Social Medicine

eTELEMED 2013

February 24 - March 1, 2013 - Nice, France

Telemedicine and Health Care
(The Brazilian Panorama)

Relevant actions

Federal Council of Medicine
(specific resolution recognizing
the role of Telemedicine since 2002)
RESOLUÇÃO CFM nº 1.643/2002

Virtual Health Libray
(<http://brasil.bvs.br>)

Specific financial support for innovation
in Telehealth and Telemedicine
(<http://www.brasilinovacao.com.br>)

Open University of the
Brazilian National Health System
(<http://www.unasus.gov.br>)

Doctors, dentists, nurses, community
health workers, managers,
and other employees of SUS will now have
access to courses at various
levels of academic training in a practical
and affordable - home, work, the lan-house.
By mail, television, computer or mobile phone.

created with the purpose of meeting the needs of
training and education of employees in the Unified
Health System - SUS

Objectives

Induce and guide the provision of
courses and specialization programs

Brazilian Telehealth National Program
(<http://www.telessaudebrasil.org.br>)

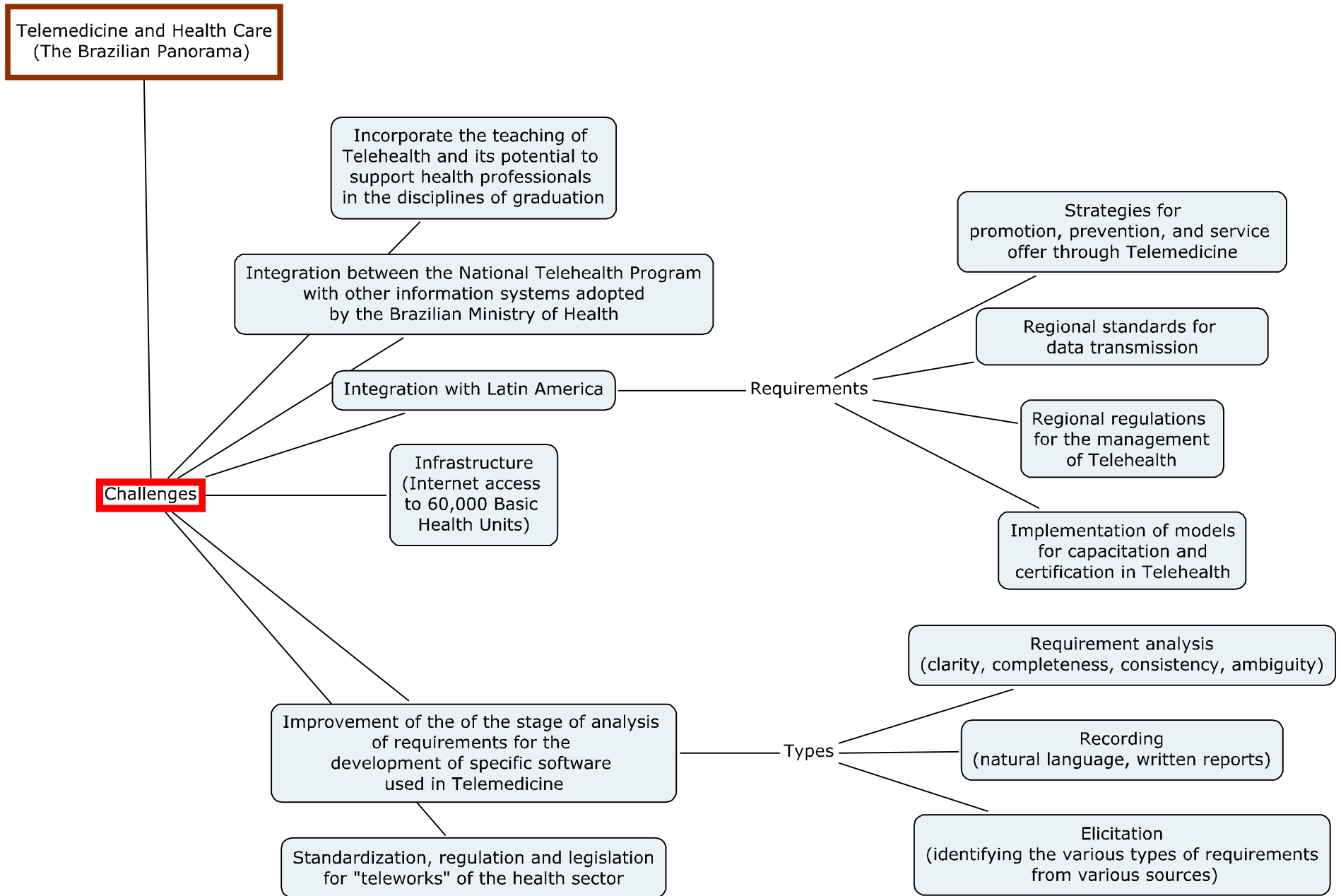
Objectives

- i) stimulate certification procedures and the use of Telehealth technologies
- ii) optimise formal and remote education
- iii) family program
- iv) deliver precise assistance in remote diagnosis and treatment

The Brazilian Telemedicine University Network
(<http://rute.rnp.br/>)
- 73 active operational units
-80 operational units by the end of 2013
- 57 special interest groups (SIGs)

Objectives

- Research
- Training
- Second opinion



The Challenge of Integration: the Need for Comprehensive eHealth Records

Anthony P. Glascock, Ph.D.
Drexel University, Philadelphia, USA

Need for Home Based Electronic Records System

- ◆ Drive to deliver more care in the home
- ◆ Escalating number of care services
- ◆ Growing range of products and non-care services
- ◆ Dramatic increase in number of people providing care and services in the home

Home Care Records Systems

- ◆ Lagging behind institutional systems
 - Hospital based systems
 - Physician practices
- ◆ Need for linkage among different systems

Need for Integration

- ◆ Home care records can be a stand-alone
- ◆ Integration with other eHealth systems makes all records more useful
- ◆ Patient centered system should be the goal
 - Self-management
 - Sharing of records with all carers

Contact Information

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Presentation of Research

Elisabeth Rakus-Andersson – professor in Applied Mathematics

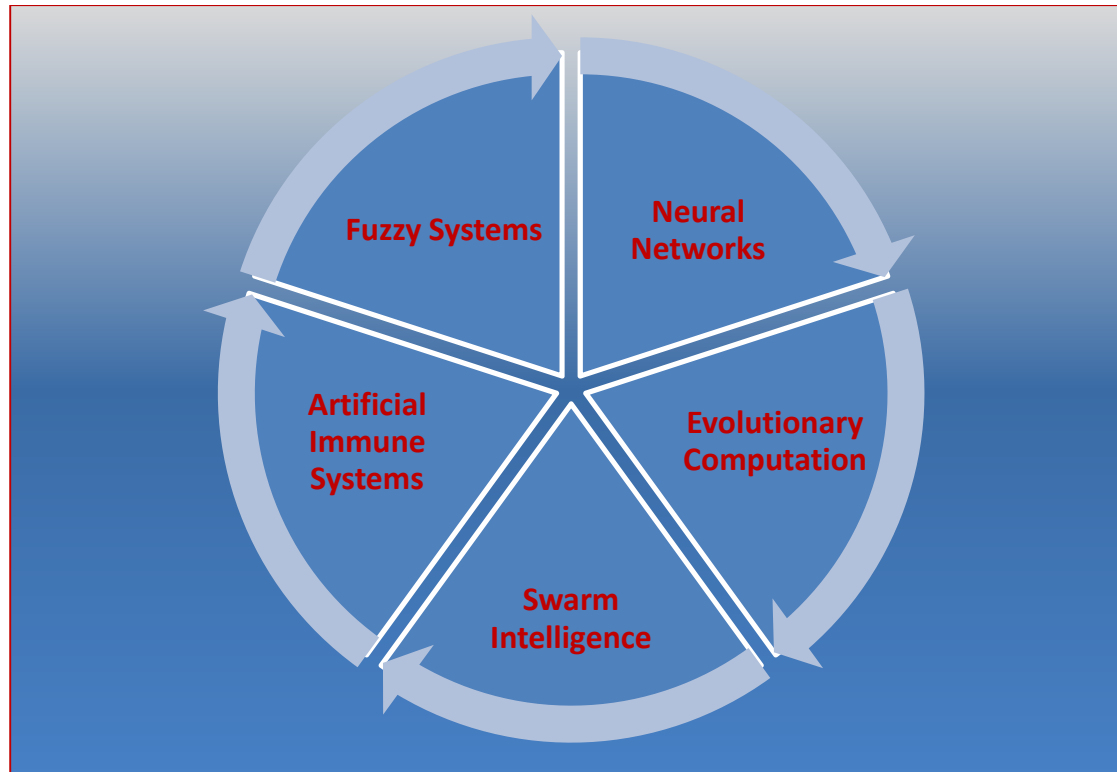
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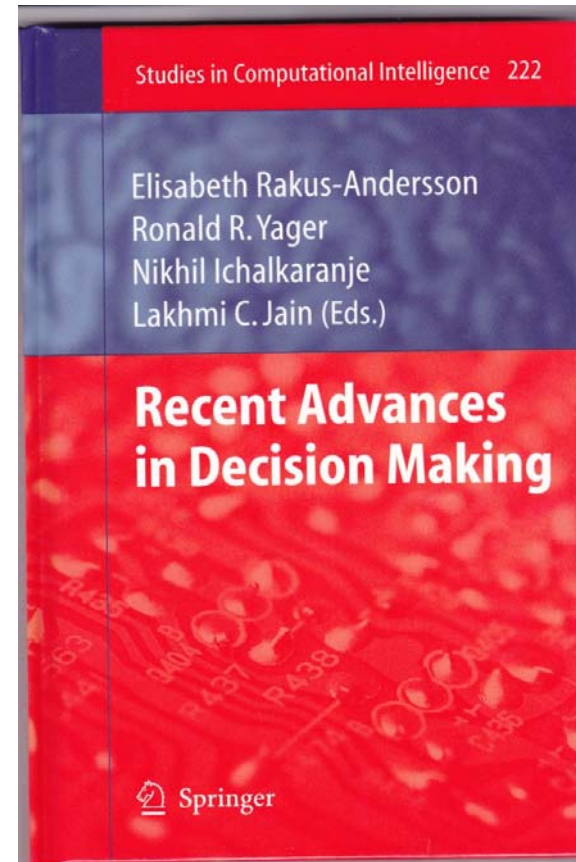
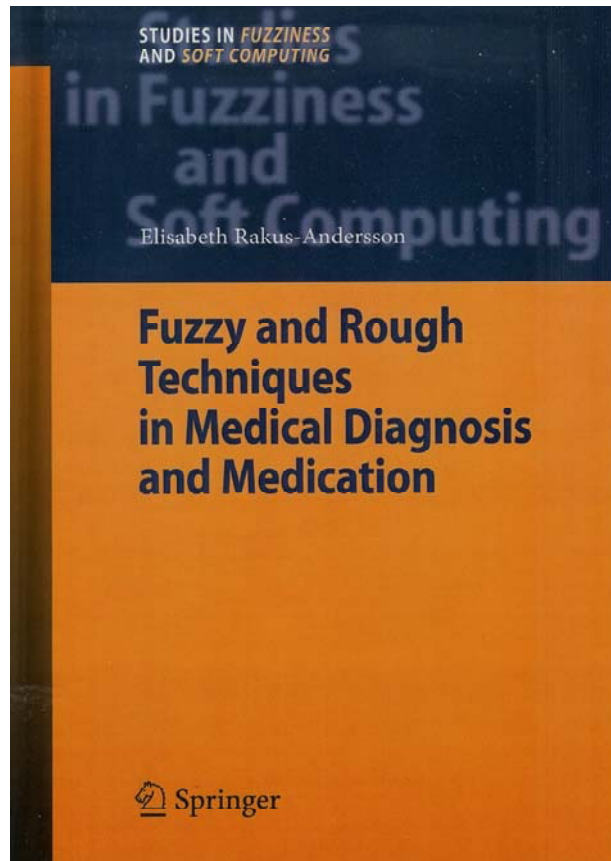


We use algorithms of computational intelligence





Own contributions in computational intelligence





Main topics of interest

- The Lattice of Verbal Fuzzy Numbers in Statistical and Numerical Methods
- Fuzzy and Rough Set Theory in Approximation and Classification of Point Sets - Applications to Telecommunications Tasks
- Fuzzy Set Theory in Medicine
- Computational Intelligence (neural networks, evolutionary algorithms, immunological systems, particle swarm) in Medicine



Fuzzy set theory in medicine

- Medical diagnosis (compositional rule of inference) tested on coronary heart disease
- Medication:
 - evaluation of medicine action level (fuzzy eigen sets) tested on heart medicines
 - choice of the most efficacious treatment (fuzzy decision making) tested on treatments in toxoplasmosis, gastric cancer, radiation cystitis
- Estimation of survival length in cancer diseases (fuzzy Mamdani and Sugeno control systems)
- Approximation of operation chance in cancer diseases (approximate reasoning)



Computational intelligence in medicine

- Operation decision “operate” contra “do not operate” for gastric cancer patients (negative selection algorithm, neural perceptron)
- Grade of decision “operate” for gastric cancer patients (fuzzy 2-means clustering)
- Choice of operation type for gastric cancer patients (rough set classification)



Grants

- Three grants from the Swedish Royal Academy of Sciences (theoretical development of fuzzy mathematics)
- "Fuzzy Sets and Fuzzy Statistics in Medical Applications" from the Blekinge Research Committee in 2008 (application of fuzzy and rough models to medical techniques)
- "Fuzzy Sets, Rough Sets and Fuzzy Statistics in Medical Applications" from the Blekinge Research Committee in 2009 (application of fuzzy and rough models to medical techniques)
- "Fuzzy Sets, Rough Sets and Fuzzy Statistics in Treatment of Gastric Cancer Patients" from the Blekinge Research Committee in 2010 (the application of fuzzy and rough models to evaluation of survival lengths and the choice of operation types)

Integrated Care and Telemedicine: Any Visible Progress?

Panellist:

Mads Nyborg , DTU Compute
manyb@dtu.dk

Context awareness in home care IT applications

- Introduction – Home care
- Are PDA's (Personal Digital Assistant) a helper or a burden?
- Context awareness
 - Application should participate in the workflow
 - Minimise typing!
 - Location info?
- Application “Smart Nursing”

Application “Smart Nursing”

- Voice messaging system
 - Improved communication
- Day scheduler
- Map integration
 - Colleagues
- Profiler
 - Sound settings
 - Status management
 - Customized address-book

