

The Risk Information Management Group undertakes leading-edge interdisciplinary research in Decision Analysis and Risk, Databases/Information Retrieval (including user-centred approaches), Personalisation, Learning, Uncertainty, and Bayesian methods. The Group's research involves numerous commercial partners and the company Agena ([www.agenarisk.com](http://www.agenarisk.com)), delivering specialised Bayesian Network solutions, grew directly out of research by key members of the Group.

## RADAR

### Risk Assessment and Decision Analysis Research Group

The group's research involves combining data and human expertise to create intelligent solutions for high stakes decisions.

In the area of risk assessment we work with practitioners to produce intelligent 'unified models', that use both data and expertise as inputs, to support expert decision making in multiple application domains. The group is currently working on improved decision making in medical, legal, systems engineering, security and safety applications.

## IR

### Information Retrieval

The group's research has created specialised search tools for applications including ecommerce, financial service portals, computer crime detection and patient management in medical fields.

Our work includes multimedia, XML, MPEG-7 and Web retrieval, knowledge-based uncertain reasoning, formal models and theories, integration of database and IR technologies (probabilistic SQL), personalisation, document clustering and summarisation, evaluation of retrieval systems, information seeking, computational linguistics, and natural language processing.



Query: "One English sentence summarising each document on sports"

```
classify (Doc, Class):-...
```

```
summarise (Doc, Sent):- ...
```

```
translate (Sent, Sent2, Lang) :-...
```

**eng\_summary\_sports(Sentence): -**

```
classify (Doc, sports;) &
```

```
summarise (Doc, Sentence):1 &
```

```
translate (Sentence, EngSentence, eng);
```

## RADAR: Current Projects

- Improving Legal Reasoning with Bayes
- Decision Support for the Management of Traumatically Injured Limbs
- Machine Learning and Causal Analysis for Improved Clinical Performance
- Bayesian Network modelling for Operational Risk in Financial sectors
- Bayesian Reasoning for Predicting Football Outcomes



- Specialises in risk management for critical systems
- Provide decision support solutions for areas involve uncertainty
- Provider of **AgenaRisk**, Bayesian Network and Simulation Software for Risk Analysis and Decision Support

## IR: Current Projects

- Flexible IR Tasks Integration
- Seamless Integration of DB+IR Technologies
- Descriptive Modelling of Knowledge-Enhanced Classifiers
- Semantic Search
- Descriptive Approach to Summarisation
- Fluency of Output in Statistical Machine Translation
- Application Specific Machine Translation Evaluation
- Search Interfaces for Visually Impaired Users