UNIVERSITY OF CAMBRIDGE

Computer Laboratory

Artificial Intelligence Research Group

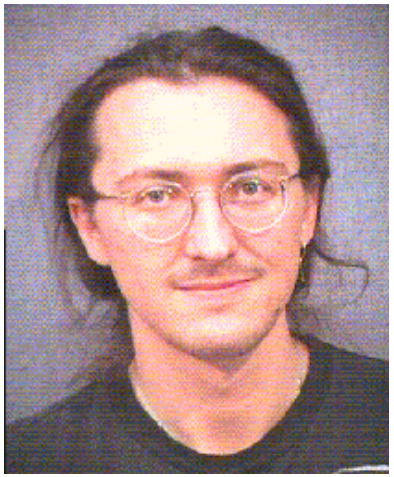
Multi-disciplinary activities:

- bio-informatics and genomics
- computational learning theory
- cognitive modeling and diagrammatic reasoning
- computer vision and pattern recognition

Dr Pietro Lió

Bio-informatics and genomics

- Profiling multi-scale and complex biomedical data
- Novel computational disease modeling frameworks
- Computational interpretations of biological processes
- Mathematical modeling in epidemiology
- Integrating molecular information with clinical results
- New diagnostic markers of diseases and therapies



Dr Sean Holden

Computational learning theory

- Mathematical frameworks for machine learning
- Applications of machine learning in pharmacology
- Learning from chemical structures having known properties, to recognise others with similar properties
- Applying machine learning in more complex areas involving cell chemistry, for applications in medicine

Dr Mateja Jamnik

Cognitive modeling and diagrammatic reasoning

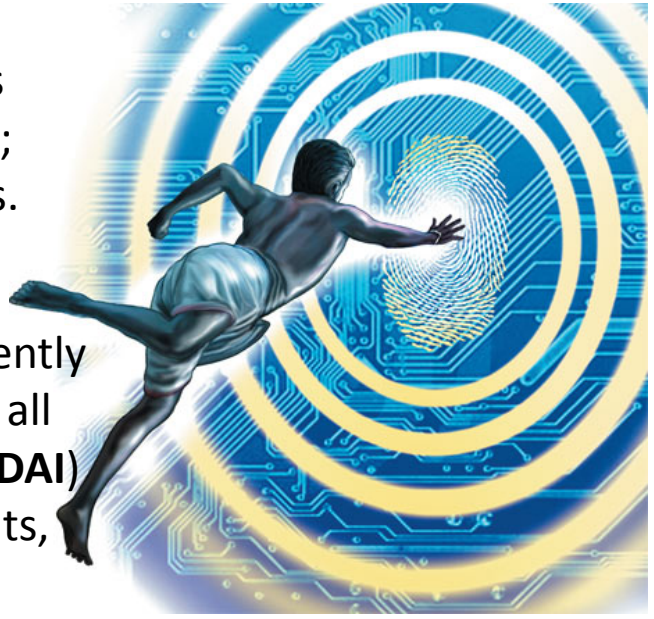
- Understanding and modeling human problem-solving
- The cognitive skills used in mathematical reasoning
- Informal methods of reasoning, such as using diagrams
- Integrating those with classical formal techniques
- Integrating human and automated reasoning
- Enabling machines to reason in a human-like manner

Dr John Daugman

Computer vision and pattern recognition

- Wavelet methods for encoding image structure in computer vision
- Phase-based representations for visual pattern recognition
- Biologically inspired approaches for computer vision
- All worldwide iris recognition systems use algorithms from here

IRIS (iris recognition immigration system) used in many UK airports for passport-free border-crossing; similar systems in many countries.



Government of India is currently enrolling the iris patterns of all 1.2 billions citizens as ID (**UIDAI**) for national access to benefits, to improve social inclusion.