

Artificial Intelligence Applications Institute

Since 2011, the Artificial Intelligence Applications Institute is part of the Centre for Intelligent Systems and their Applications (CISA) within the School of Informatics at the University of Edinburgh. AIAI and its members continue to make available its resources, educational materials and expertise to government agencies, commercial organisations and other educators. Applied AI work within CISA and beyond continues to be performed by staff, students and collaborators involved with AIAI.

For over three decades there have been many innovative applications of AI performed by AIAI alongside its clients and collaborators. Some of our key achievements include:

- Formation - a system to lay out all British Telecom Yellow Pages directories and to create a new business area for Pindar Set Ltd for responsive marketing support and catalogue layout systems. Winner of an award for innovative applications of AI in 1998.
- Expert Provisioner - a system for the RAF Logistics to assist with procurement of spare parts. Saves £30m per annum for the RAF and is now being deployed to the British Army and Navy.
- EASE - system deployed throughout Europe to estimate occupational exposure to hazardous substances for health and safety regulations.
- Fraud Detection - Case-Based Reasoning has been applied to screen applications for financial products with MCL Software.
- Ghostwriter - multilingual support for aero-engine maintenance procedures with British Aerospace and Dassault Aviation (France).
- O-Plan and I-X - command, planning and control agents to support non-combatant evacuation operations, US Army military operations in urban terrain, multinational coalition operations, disaster relief, search & rescue, etc.
- Optimum-AIV - planning system for assembly, integration and test of Ariane IV payloads for the European Space Agency.
- EUMETSAT - specification of the telecommand system for the European Meteorological Spacecraft Control Centre.
- International Standards - inputs to the development of standards for process specification, workflow, enterprise modelling, etc.

Clients and Collaborators include:

Adobe, AEA Technology, Amoco, Arup, AstraZeneca, Australia CSIRO, BBN Corp., Boeing, Bow Valley, Building Research Establishment, British Aerospace, British Telecom, Bristol and West Building Society, CISE, Conoco, CRI Denmark, Cycorp, DARPA, Digital, Dstl, EADS, Edify, Elf, Enigmatics, European Silicon Structures, ESEC, ESTEC, EUMETSAT, European Space Agency, Exxon, Fire Service College, Ford, GCHQ, GEC Marconi, Glenkeir Distilleries, GlobalInfoTek, Hewlett Packard, Health & Safety Executive, Hitachi, IBM, ICL Fujitsu, IHMC, Ilog, Intense Photonics, ISX, Kodak, Lloyd's Register, Lockheed Martin, Logica, Metier, Motorola, National Law Library, Nationwide, NCR, NIST, Nynas, Pilkington, Pindar, Petroleum Science & Technology Institute, QinetiQ, RAF, Robertson Group, Rolls-Royce & Associates, Royal Bank of Scotland, Schindler Lifts, Seiko, Sharp, Shell, Slam Games, Standard Life, Systems Designers, Teknowledge, Texaco, Toshiba, UBS, Unilever, US Air Force, US Army, USPACOM, USJFCOM, plus many world-leading research institutes and universities.



AIAI has worked in many areas, e.g.,

- Emergency response, applying techniques of
 - planning and workflow
 - knowledge modelling
 - modelling of behaviour
- Bioinformatics, applying techniques of
 - search
 - ontological modelling
- Document Authoring, applying techniques of
 - knowledge-based layout
 - plan-based modelling
 - natural language generation
 - models of design rationale
 - intelligent systems
- Risk Management, applying techniques of
 - intelligent systems
 - knowledge modelling
 - knowledge management
 - planning and workflow
- Games and Virtual Reality
 - agent technology
 - planning
 - ontology modelling
- Logistics, applying techniques of
 - planning and workflow
- Finance, applying techniques of
 - adaptive systems
 - decision support systems
- Business intelligence
 - knowledge modelling
 - data and process analysis
 - agent and role modelling
 - intelligent systems
 - planning and workflow
- Aerospace
 - planning and scheduling
 - knowledge modelling
- Petroleum
 - intelligent systems
 - knowledge modelling
 - intelligent front-ends
 - knowledge-based diagnostics
- Virtual Enterprises
 - collaborative systems
 - planning and workflow

AIAI has used a range of technologies, e.g.,

- Adaptive Systems
 - Case-based Reasoning
 - Genetic Algorithms
 - Data Mining
- Planning and Workflow
 - process support
 - cooperative work
 - intelligent agents
- Intelligent Systems
 - knowledge-based systems
 - decision support systems
 - diagnostic systems
- Knowledge Management
 - identification and modelling of knowledge assets
 - management of knowledge assets
- Intelligent Interfaces
 - dynamic creation of content relevant to context
 - model-driven visualisations
- Intelligent Virtual Worlds
 - collaborative work spaces
 - virtual collaboration centres
 - intelligent virtual assistants

AIAI encouraged close working relationships with the organisations it collaborated with and particularly focuses on “people-to-people skill transfer”. It did this via:

- consultancy
 - requirements analysis,
 - knowledge modelling (processes, ontologies, domains)
 - technology studies
 - feasibility studies
 - development of standards
- building software
 - demonstrators
 - prototypes
 - proof-of concept systems
 - design of software systems
- training
 - AI programming
 - AI methods and techniques
- as partners in the form of flexible affiliateships combining service to address changing needs

