Artificial Intelligence Methods (G52AIM)

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Module Introduction

Course Information

- **G52AIM web pages**
  - http://www.cs.nott.ac.uk/~rxq/g52aim.htm
  - http://www.cs.nott.ac.uk/~gxk/aim/2009/
    - All lecture slides and additional notes
    - Coursework (available soon)
    - Assessment
    - Textbooks
    - Course schedule
    - Other resources
    - Previous exam paper/example questions

Course Information

- **Lectures**
  - Handouts/notes
  - Willingness to answer questions, i.e. mailing list
  - More feedback on coursework

- **Teaching method**
  - Lectures: approx. 20 hours
  - Jointly taught with Professor Kendall
  - Private study: approx. 20 hours
  - Module mailing list: g52aim@cs.nott.ac.uk

Course Information

- Lecture time - location

  - Friday 3-5pm
  - JC-BSSOUTH-A26+

  - Lecture schedule might be slightly adjusted (enough notice will be given)

Assessment

- Coursework
  - **Coursework I**, 5%
    - 2/3 pages "report/essay" about basics of optimisation
    - Deadline: 23rd March 2010, 3pm
  - **Coursework II**, 20%
    - **Implementation required**
    - Some optimization algorithms on some domain
    - Prefer Java/C++/C#, but no GUI needed!
    - Deadline: 11th May 2010, 3pm

Assessment

- Exam
  - 75%
  - Covering all materials in the lectures
  - 6 questions from which you can choose 4

  - Some past papers and suggested answers available at the module's web page

Schedule

- Lecture 1 : Introduction & Local search (today)
- Lecture 2 : Simulated annealing & Constructive heuristics
- Lecture 3 : Tabu search & Algorithm design
- Lecture 4 : Genetic programming (gxk)
- Lecture 5 : Variable neighborhood search & coursework

Schedule

- Lecture 6 : Genetic algorithms
- Lecture 7 : Case study (rxq)
- *Coursework 1 due*
- Lecture 8 : Ant algorithms
- Lecture 9 : Hyper-heuristics
- *Easter holiday*
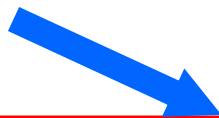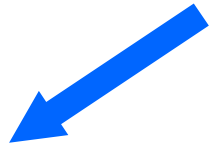- Lecture 10 : Case study
- *Coursework 2 due*

Course Context

Course Context

- Related modules
  - G53KRR Knowledge representation and reasoning
  - G53DIA Designing Intelligent Agent
  - G53DSS Decision support methodologies
  - G51IRB Introduction to Robotics
  - G52ARB Advanced Robotics

Textbooks

- **Search Methodologies – Introductory tutorials in optimization and decision support techniques*, Burke and Kendall 2005**

  Chap 1 : Introduction
  Chap 4 : Genetic Algorithms
  Chap 5 : Genetic Programming
  Chap 6 : Tabu Search
  Chap 7 : Simulated Annealing
  Chap 8 : Variable Neighborhood Search
  Chap 17 : Hyper-heuristics
  *available in the library