COMP310Multi-Agent Systems Session: 2017-2018

Dr Terry R. Payne Department of Computer Science





MICHAEL WOOLDRIDGE



What is it all about?

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Bargaining & Negotiation

Social Welfare (Voting)







Planning & Deliberation



Rational Decision Making

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General Admin

• Lecturer: Dr Terry Payne

- Ashton Building
- Email: T.R.Payne@liverpool.ac.uk
 - Surgery: Mon/Wed/Thur (email for appointment)

Course Notes

- Available from the web site as pdfs
 - Lectures will be screen cast and available from the web sites

Web Site and Resources

- General information
 - http://www.csc.liv.ac.uk/people/trp/COMP310.html

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Aims:					Bargaining: COMP Amuing: COMP	MP310-Chapter	r15.pdf			
1) To introduce the student to the	concept of an a	gent and mu	ulti-agent systems,	and the main	- Arguing. COMP	ono-onapterno.				
applications for which they are appropriate;					Class Reading					
 2) To introduce the main issues surrounding the design of intelligent agents; 3) To introduce the main issues surrounding the design of a multi-agent society. 					Note, not all the papers will necessarily be available as					
4) To introduce a contemporary pla	atform for imple	menting age	ents and multi-ager	nt systems	the web, but can be logged into a Unive	rsity machine	to access the	may also em.		
Learning Outcomes:					Intelligent Agent:	s: the design o	f intelligent a	agents		
At the end of the module, the student will be able to demonstrate:			Chapter 2: "Is it an Agent, or Just a Program?: A Transmission of the second seco							
1) Understand the notion of an agent, how agents are distinct from other software paradigms				Chapter 3: "Age	ents", Stan Fra ent Oriented Pro	nkiin and Art ogramming",Y	Graesser foav Shoi			
(eg objects) and understand the characteristics of applications that lend themselves to an agent-oriented solution:				Chapter 4: "Plai	ns and resource	-bounded pr	actical re			
 Understand the key issues associated with constructing agents capable of intelligent 				Chapter 5: "A R	nan, David J. Is Iobust Layered (raei, Martna i Control Syste	e. Pollaci m for a l			
autonomous action, and the main approaches taken to developing such agents;					Robot", Rodney	A. Brooks.				
3) Understand the key issues in designing societies of agents that can effectively cooperate in order to solve problems, including an understanding of the key types of multi-agent				 Multi-Agent Systems: societies and working togeth Chapter 7: "Agent Communication Languages: Reth 						

- interactions possible in such systems
- 4) Understand the main application areas of agent-based solutions, and be able to develop a meaningful agent-based system using a contemporary agent development platform.

Approximate Syllabus:

Chapter 9: "Mobile Software Agents: An Overview", V.A. Pham and

Chapter 8: "Distributed Problem Solving and

Principles", Munindar P. Singh.

Planning", E.H.Durfee.

Kinny and M. Georgeff.

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Module Delivery

• 3 Lectures per week

- Lectures will be captured and uploaded to the stream site
 - Lectures from previous years have been lecture captured and available from the web site
 - Attendance is still expected!!

No Lab Classes or Assignments

Revision Exercises will be made available

•The module will be 100% Exam

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- The module was previously made available from iTunesU
 - Slides are available from iTunes
 - There may be some revisions in the current slides.
- Full materials available from the iTunesU application on iOS.
 - Links to papers
 - Lecture notes
 - Links to Screen Casts

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Subscribe

University of Liverpoo Category: Computer Science Language: English Published 27 Mar, 2018 When viewed using the iTunes U app f iOS, this course may also include enhanced materials such as instructor notes and assignments

Library

🗖 All

Videos

Documents

Web Links

Multi-Agent Systems

Terry Payne

Details Ratings and Reviews Related

Description

Multi-agent systems have emerged as one of the most important areas of research and development in information technology in the 1990s. A multi-agent composed of multiple interacting software components known as agents, which are typically capable of co-operating to solve problems that are beyond t individual member. Multi-agent systems are important primarily because they have been found to have very wide applicability, in areas as diverse as indus and electronic commerce. This module will begin by introducing the student to the notion of an agent, and will lead them to an understanding of what an be constructed, and how agents can be made to co-operate effectively with one another to solve problems

Course Outline

I. Introduction: what is an agent?

- a. Agents vs objects, expert systems and distributed systems
- b. typical application areas for agent systems.
- II. Intelligent Agents: the design of intelligent agents
- a. Abstract Models of Agents

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5	Chapter	12 Le	cture Notes		This chap	ter explores	the theory be	i	
6	Chapter	11 Le	cture Notes		In this cha	apter, we exp	olore the basi	i	
7	Chapter	10 Le	cture Notes		This chap	ter examine	s a number of	i	
8	Chapter	9b Le	cture Notes		We explor	re the notion	of mobile ag	i	
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Chapter 1 Lecture Notes

Web Link

Terry Payne

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Course Introductio

An Introduction to MultiAgent Systems - Second Edition

Admin

Main Taught Material

Introduction

- what is an agent?
- agents and objects
- agents and expert systems
- agents and distributed systems
- typical application areas for agent systems

Intelligent Agents

- the design of intelligent agents reasoning agents
- agents as reactive systems
- hybrid agents
- layered agents

MultiAgent Systems

- classifying multi-agent interactions cooperative versus non-cooperative
- zero-sum and other interactions
- what is cooperation?
- how cooperation occurs the Prisoner's dilemma and Axelrod's experiments
- interactions between self-interested agents:
- auctions & voting systems; negotiation
- Interactions between benevolent agents: cooperative distributed problem solving
- coherence and coordination
- argumentation, legal reasoning, dialogues



Course Text

The module is based on Michael Wooldridge's book:

- An Introduction to MultiAgentSystems
 - Wiley 2009
 - http://www.cs.ox.ac.uk/people/michael.wooldridge/pubs/imas/ IMAS2e.html
- The material has also been revised and updated over the last few years
 - Thanks go to both Mike (who used to teach this course) and additional material by Simon Parsons.



SECOND EDITION

An Introduction to MultiAgent Systems

MICHAEL WOOLDRIDGE

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Module Aims

Module Aims

- 1. To introduce the student to the concept of an agent and multi-agent systems, and the main applications for which they are appropriate;
- 2. To introduce the main issues surrounding the design of intelligent agents; 3. To introduce the main issues surrounding the design of a multi-agent
- society;
- 4. To introduce a contemporary platform for implementing agents and multiagent systems.



• At the end of the module, the student will be able to demonstrate:

- agent-oriented solution;
- interactions possible in such systems;

Module Objectives

1. Understand the notion of an agent, how agents are distinct from other software paradigms (eg objects) and understand the characteristics of applications that lend themselves to an

2. Understand the key issues associated with constructing agents capable of intelligent autonomous action, and the main approaches taken to developing such agents;

3. Understand the key issues in designing societies of agents that can effectively cooperate in order to solve problems, including an understanding of the key types of multi-agent

4. Understand the main application areas of agent-based solutions, and be able to develop a meaningful agent-based system using a contemporary agent development platform.



• The obvious...

- Switch off all mobile phones during lectures
- Do not sign the register on behalf of others
- Attend lectures and attempt the exercises set this will help you do the continuous assessments
- Ask questions if there is anything that you do not understand

And respect your fellow students...

- There are people here who want to learn!
- If you want to talk or mess around, then fine...
- ...BUT do it somewhere else!

Finally

