

Course Overview: AAMAS 2025



Outline

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Instructors: Campus Alameda



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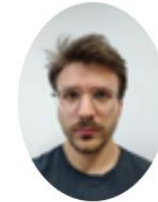
Instructors: Campus Oeiras (Taguspark)



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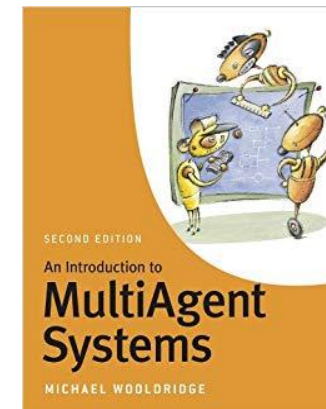
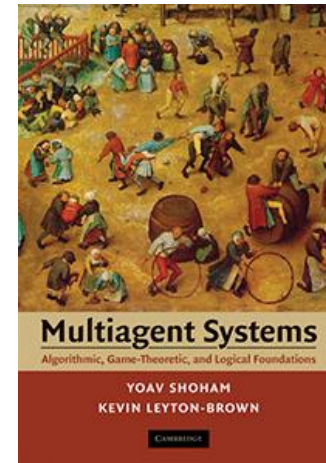
Learning Objectives

- To introduce key concepts, different views, and applications of **agent systems**
- To present a structured view on **agent architectures**
 - Perception, decision making, and action
- To map real-world problems into agent-oriented tasks
 - Design reactive, deliberative, and hybrid agents
 - Develop agents with decision-making algorithms
 - Design societies of agents to solve specific problems

Bibliography

Primary

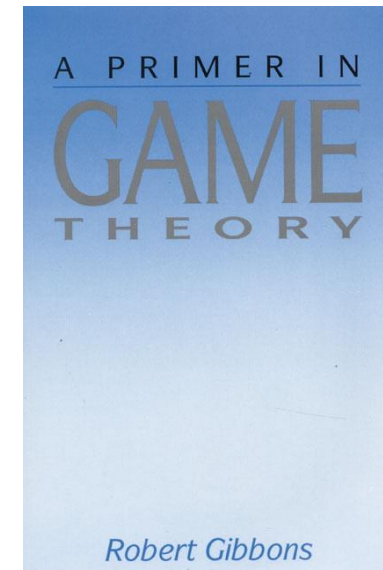
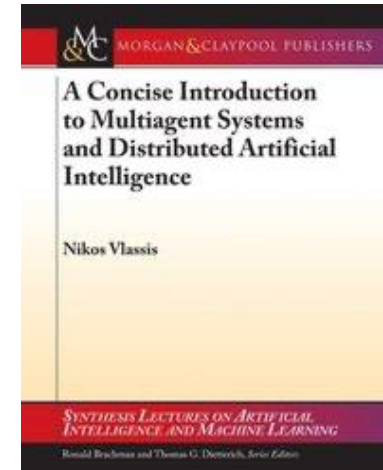
- ***Multiagent Systems: Algorithmic, Game-Theoretic, and Logical Foundations***, 1st Ed, Yoav Shoham and Kevin Leyton-Brown, Cambridge University Press, 2009 [S+LB09]
- ***An Introduction to MultiAgent Systems***, 2nd Ed, Michael Wooldridge, Wiley & Sons Ltd, 2009 [W09]



Bibliography

Secondary

- ***A Concise Introduction to Multiagent Systems and Distributed Artificial Intelligence***, Nikos Vlassis, Morgan & Claypool, 2007 [V07]
- ***Primer In Game Theory***, Robert Gibbons, Pearson Education Limited, 1992



Grading

- **Exam 50%** (minimum 8v)
Date: Wednesday, 25/06/2025
- **Exam Retrial** (minimum 8v)
Date: Tuesday, 08/07/2025
- **Project 50%** (minimum 8v)
Proposal: develop an agent system to answer a complex problem, reimplement a system
Proposal due date: Friday, 09/05/2025
Project due date: Friday, 06/06/2025
Project presentation (in the lab): week of 09/06/2025

Evaluation (including deadlines) is the same
for working students: no exceptions!

Deadlines are fixed: no changes are allowed

Project and Tests – Honor Code

- Cheating is not tolerated in this course!
- Projects are to be developed by each group individually
- Exams are to be done by each student individually
- **Any cheating will lead to an immediate fail of all students involved**

Schedule

| | Seg 5/5 | Ter 5/6 | Qua 5/7 | Qui 5/8 | Sex 5/9 | |
|-------|---------------------------|-----------------------------|------------------------------|---------------------------|------------------------------|--|
| 07:00 | | | | | | |
| 08:00 | | | | | | |
| 09:00 | | | 08:30 - 10:30 T A5 | | 09:00 - 12:00 L V1.12 | |
| 10:00 | | 10:30 - 12:30 T A5 | 10:30 - 13:30 L 0 - 16 | 10:00 - 12:00 T GA5 | 10:30 - 13:30 L 0 - 16 | |
| 11:00 | | | | | | |
| 12:00 | | | | | | |
| 13:00 | | | | | 12:30 - 15:30 L V0.08 | |
| 14:00 | | 14:00 - 17:00 L V1.24 | | | | |
| 15:00 | 15:00 - 17:00 T GA1 | | 15:30 - 18:30 L V0.06 | | | |
| 16:00 | | | | | | |
| 17:00 | | | | | | |
| 18:00 | | | | | | |

Office Hours

- Check the office hours in the course webpage (at Fenix)
- Questions about lectures, projects, lab assignments, etc. → **Office hours**
- Questions about logistics → **e-mail**

Planning

| Week | Lectures | Book Chapters | Lab | Dates |
|--------------------------|--|--|--------------------------------------|-------------------|
| 28 April | 1. Introduction Holiday (Alameda) | Chapter 2 [W09] Chapters 3, 4 & 5 [W09] | (Registration) | |
| 5 May | 2. Agent Architectures 3. Rational Agents + Normal-form Games | Chapters 3, 4 & 5 [W09] Chapter 3 [S+LB09] | Proposal / <i>Reactive Agents</i> | Proposal due date |
| 12 May | 4. Normal-form Games II and Mixed Strategies 5. Coordination Games I | Chapter 3 [S+LB09] Chapter 3 [V07] Chapter 2 [S+LB09] Chapter 4 [V07] | Proposal Presentation | |
| 19 May Dia do Técnico | 6. Extensive-form Games I 7. Extensive-form Games II | Chapter 5 [S+LB09] | <i>Coordination</i> | |
| 26 May | 8. Repeated Games (No tagus começa na semana anterior) 9. Multiagent Learning I | Chapters 6, 7, 11 [S+LB09] | <i>Learning Agents</i> | |
| 2 June | 10. Multiagent Learning II 11. Bayesian Games and Auctions | Chapters 6, 7, 11 [S+LB09] | Project | Project due date |
| 9 June | Holiday (Tagus) 12. Bayesian Games and Auctions | Chapter 6 [S+LB09] | Project Presentation | |

Project

- Implement an agent system
- Run empirical studies
- Deliver
 - The system source code and executable
 - A report about the agents' system and the empirical evaluation
 - A video demonstrating the agents in action
 - 15 minute presentation in the lab

Project

Reimplement an existing system, choose a research paper to reproduce

or

Identify a relevant real-world problem or social context to study

- Specify the problem using a (multi)agent system
 - AA: decision under uncertainty, complex environments, learning
 - MAS: cooperation, negotiation, multiagent learning
- Specify and develop the agent(s) intelligence using reactive, deliberative and adaptive behavior
- Run comprehensive simulations and present empirical results and discussion of agent(s) behavior

Thank You



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