AGENT AND MULTI-AGENT PROGRAMMING

— VIEWS —

ALESSANDRO RICCI
a.ricci@unibo.it
ABOUT AGENTS AND MAS

• Agent concept

• Key features
  – degree of *autonomy*
  – reactivity & pro-activity
    • being situated in an environment
    • having a task to pursue
ABOUT AGENTS AND MAS

• Multi-agent Systems

• Key aspects
  – agent interaction
  – agent communication, coordination, organization
AGENT AND MAS & PROGRAMMING

• Four main related perspectives
  – (D)AI perspective - abstractions & techniques for programming intelligent systems
    • individual components, systems of components
    • agent and multi-agent programming languages & frameworks
  – mobile systems - abstractions & techniques for programming mobile computing systems
    • mobile agents migrating through nodes of a network
  – modeling and simulation perspective: abstractions for modelling and simulating complex systems
    • the starting point is a complex system to be modelled and simulated
  – programming and SE perspective: abstractions & techniques for programming modern concurrent and distributed systems
    • agents as follow-up of objects, concurrent objects and actors
(D)AI PERSPECTIVE

• see slides on agent and multi-agent programming
AVAILABLE EXPLORATIONS AND PROJECTS

• Using Jason and JaCaMo
  – as reference models and technologies for the design and development of real-world intelligent systems
  – integrating AI-techniques when necessary
• Explorations
  – design and programming *mirror worlds*
    • see MW slides
  – embedded systems and robot programming
  – programming bots in games
PROGRAMMING AND SOFTWARE ENGINEERING PERSPECTIVE

• see slides about ALOO project
AVAILABLE EXPLORATIONS AND PROJECTS

• Exploring the use of ALOO abstractions and technology in some relevant domain and real-world problems
  – concurrent apps, mobile app, web app
    • comparison with actor-based approaches
  – Internet-of-Things & embedded
    • agent programming on Arduino and RaspberryPi
    – including mirror worlds
• Joining research on ALOO model & technology
  – contributing to ALOO platform
    • based on Eclipse/Xtext toolchain
    • libraries for OS and high-level functionalities
  – tackling open research issues, e.g:
    • mechanisms for reuse
    • finalising the complete integration with objects and functions