

# Robotics and Autonomous Systems

## Lecture 30: Recap

Richard Williams

Department of Computer Science  
University of Liverpool



- Here we recap what was covered in the module.

## Agents and robots



## Programming robots



## Locomotion



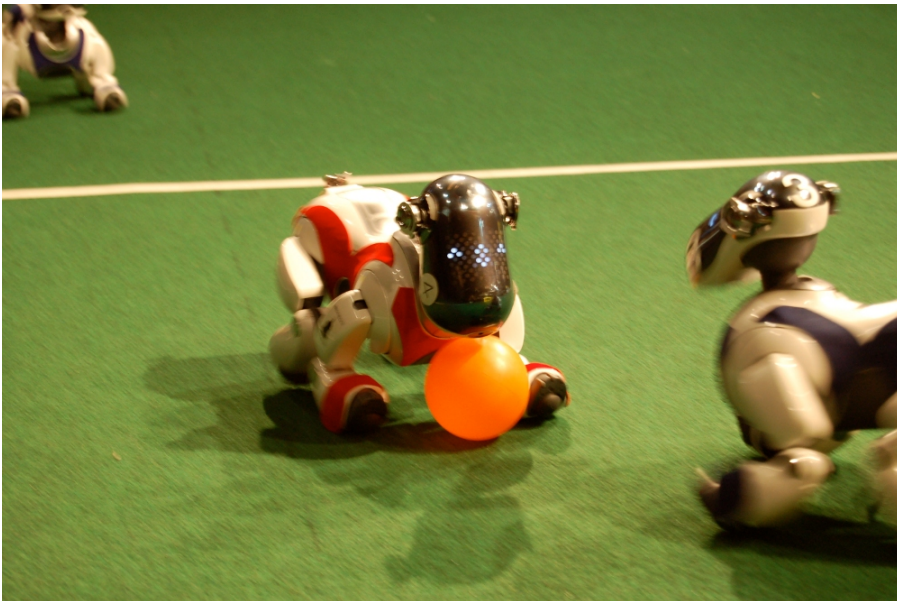
5/28

## Kinematics



6/28

## Perception



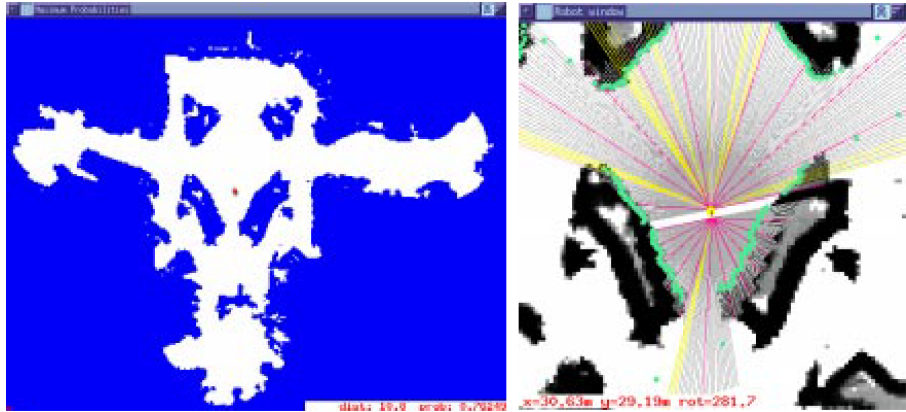
7/28

## Maps and mapping



8/28

## Localization



## Threads





## Behavior-based robotics



• Toto

## Navigation

				S
			6	
			5	6
1	2		4	5
0 <sup>G</sup>	1	2	3	4

 obstacle  
 cell with distance

## Bluetooth communication in LeJOS



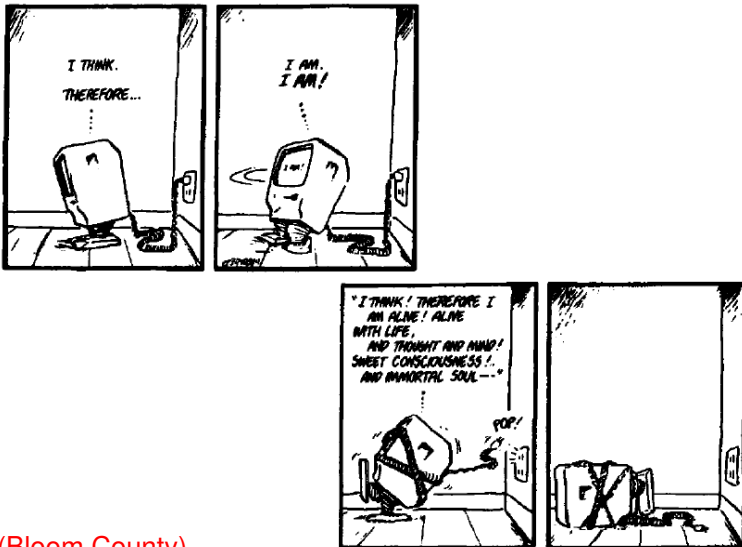
13/28

## Robots Live!



14/28

## Agents and the intentional stance



(Bloom County)

15/28

## Practical Reasoning

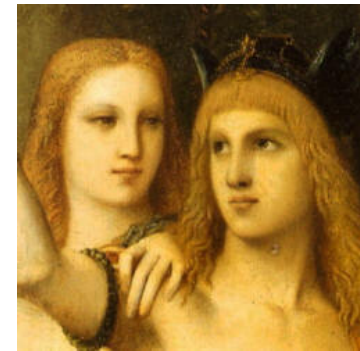
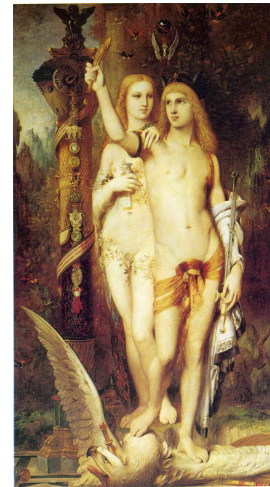


16/28

# Agent Communication



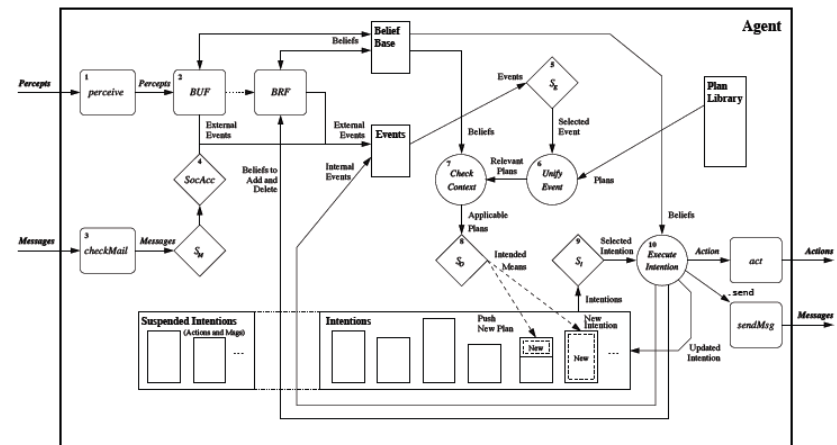
# Jason and AgentSpeak



# Programming in Jason



# The Jason Interpreter

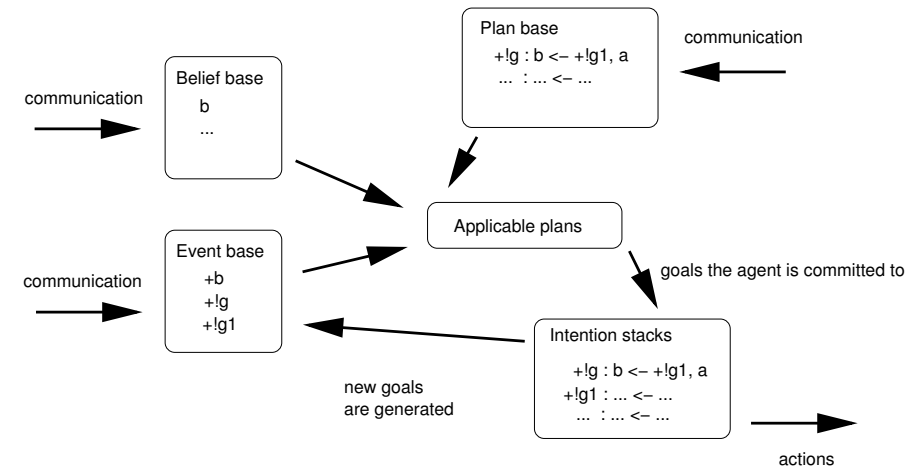


# Communication in Jason

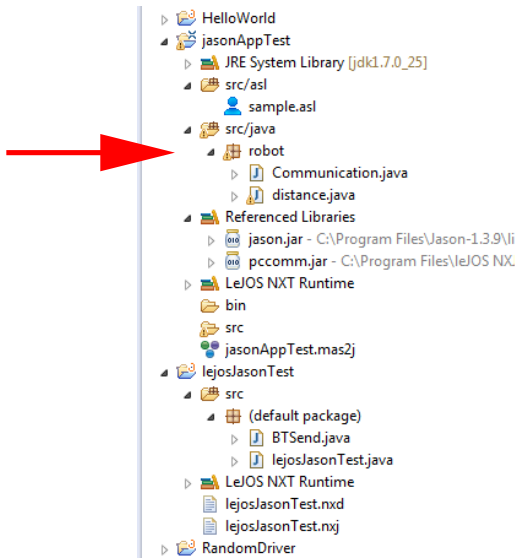
```
[c] Waiting participants...
[c] Sending CFP to [p2,p3,pn,p1,pr]
[c] Offers are
[offer(108.31156595045812,p1),offer(101.21368786125215,p3),offer(105.2019269410
6139,p2)]
[c] Winner is p3 with 101.21368786125215
[p1] I lost CNP 1.
[p3] My proposal '101.21368786125215' won CNP 1 for fix(computer)!
[p2] I lost CNP 1.
```

Clean Stop Pause Debug Sources

# Goal-based programming



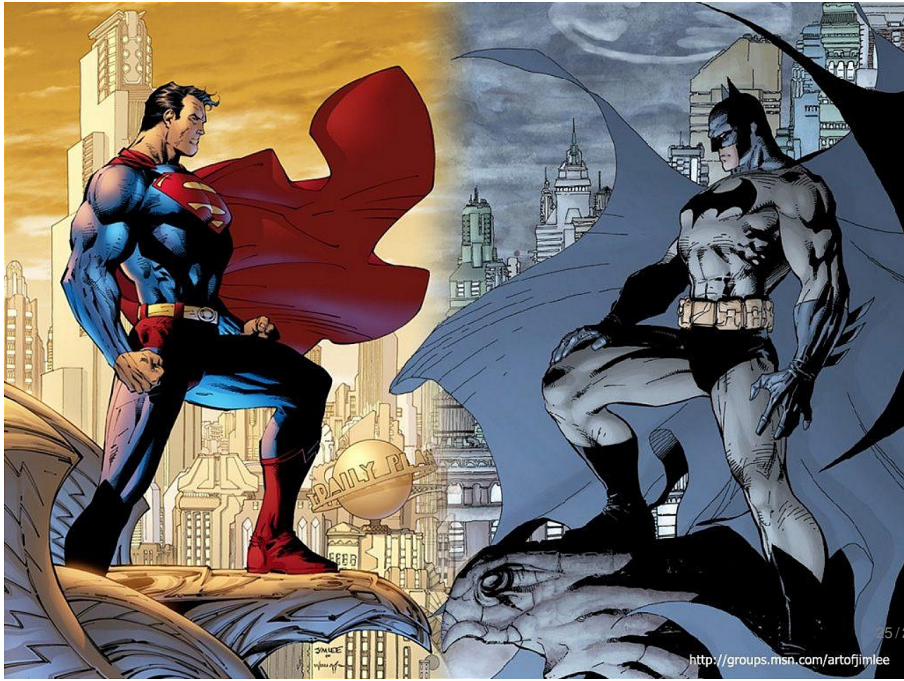
# LeJOS and Jason



# Teamwork



## Self-interested agents



25 / 28

## Learning in robots



26 / 28

## Applications



27 / 28

## Summary

- This lecture recapped the topics from the module.
- Hope you enjoyed it.

28 / 28