

CS344M

Autonomous Multiagent Systems

Patrick MacAlpine

Department of Computer Science
The University of Texas at Austin

Good Afternoon, Colleagues

Are there any questions?

Logistics

- Programming assignment 4 - any questions?

Logistics

- Programming assignment 4 - any questions?
 - 2D or 3D
- Next week's readings on RoboCup case studies

Logistics

- Programming assignment 4 - any questions?
 - 2D or 3D
- Next week's readings on RoboCup case studies
- Talks in the department:
 - Leif Johnson, PhD Defense, today at 4:30pm (GDC 4.518)
 - “Redundancy Reduction in Motor Control”

ACL Desiderata

ACL Desiderata

Form: simple, readable, concise, easy to parse and generate, extensible

ACL Desiderata

Form: simple, readable, concise, easy to parse and generate, extensible

Content: well-defined primitives, flexible content

ACL Desiderata

Form: simple, readable, concise, easy to parse and generate, extensible

Content: well-defined primitives, flexible content

Semantics: unambiguous, address location and time

ACL Desiderata

Form: simple, readable, concise, easy to parse and generate, extensible

Content: well-defined primitives, flexible content

Semantics: unambiguous, address location and time

Implementation: efficient, networking issues hidden, amenable to partial implementation

ACL Desiderata

Form: simple, readable, concise, easy to parse and generate, extensible

Content: well-defined primitives, flexible content

Semantics: unambiguous, address location and time

Implementation: efficient, networking issues hidden, amenable to partial implementation

Networking: usable on top of existing protocols

ACL Desiderata

Form: simple, readable, concise, easy to parse and generate, extensible

Content: well-defined primitives, flexible content

Semantics: unambiguous, address location and time

Implementation: efficient, networking issues hidden, amenable to partial implementation

Networking: usable on top of existing protocols

Environment: interoperability with other languages

ACL Desiderata

Form: simple, readable, concise, easy to parse and generate, extensible

Content: well-defined primitives, flexible content

Semantics: unambiguous, address location and time

Implementation: efficient, networking issues hidden, amenable to partial implementation

Networking: usable on top of existing protocols

Environment: interoperability with other languages

Reliability: reliable, secure, authentication possible, error handling

Three-layer organization

- Content: free-form (domain-dependent)

Three-layer organization

- **Content: free-form (domain-dependent)**
- *Communication: who is sending, etc.*

Three-layer organization

- **Content: free-form (domain-dependent)**
- *Communication: who is sending, etc.*
- **Message: performatives and fields (standard)**

Three-layer organization

- **Content: free-form (domain-dependent)**
- *Communication: who is sending, etc.*
- **Message: performatives and fields (standard)**

(tell

:sender stock-server
:content (PRICE IBM 14)
:receiver joe
:in-reply-to ibm-stock
:language LPROLOG
:ontology NYSE-TICKS)

Three-layer organization

- **Content: free-form (domain-dependent)**
- *Communication: who is sending, etc.*
- **Message: performatives and fields (standard)**

(tell

:sender *stock-server*
:content **(PRICE IBM 14)**
:receiver *joe*
:in-reply-to *ibm-stock*
:language *LPROLOG*
:ontology *NYSE-TICKS*)

ACLs – Current Landscape

“Languages exist to serve a purpose, namely the communication between willing—and occasionally unwilling—participants”

ACLs – Current Landscape

“Languages exist to serve a purpose, namely the communication between willing—and occasionally unwilling—participants”

- There are different options
- Subtle differences

ACLs – Current Landscape

“Languages exist to serve a purpose, namely the communication between willing—and occasionally unwilling—participants”

- There are different options
- Subtle differences
- Why a standard?
 - What are the pros and cons?

ACLs – Current Landscape

“Languages exist to serve a purpose, namely the communication between willing—and occasionally unwilling—participants”

- There are different options
- Subtle differences
- Why a standard?
 - What are the pros and cons?
- How are they created?

ACLs – Current Landscape

“Languages exist to serve a purpose, namely the communication between willing—and occasionally unwilling—participants”

- There are different options
- Subtle differences
- Why a standard?
 - What are the pros and cons?
- How are they created?
- Sample FIPA applications on resources page

Soccer server communication

- What is the soccer server communication protocol?

Soccer server communication

- What is the soccer server communication protocol?
 - Only one agent from a team can speak at a time (or at least be heard at a time)
 - Communication limited to 50 meters
 - Limited bandwidth
- How does it relate?

Soccer server communication

- What is the soccer server communication protocol?
 - Only one agent from a team can speak at a time (or at least be heard at a time)
 - Communication limited to 50 meters
 - Limited bandwidth
- How does it relate?
- Does an ACL make sense in the soccer server? If so, under what circumstances?

Soccer server communication

- What is the soccer server communication protocol?
 - Only one agent from a team can speak at a time (or at least be heard at a time)
 - Communication limited to 50 meters
 - Limited bandwidth
- How does it relate?
- Does an ACL make sense in the soccer server? If so, under what circumstances?

Soccer server communication questions

- How to have only one agent to speak at a time?

Soccer server communication questions

- How to have only one agent to speak at a time?
- How to get the most from limited bandwidth?

Soccer server communication questions

- How to have only one agent to speak at a time?
- How to get the most from limited bandwidth?
- Can opponent agents interfere with messages and if so how to prevent this?

Soccer server communication questions

- How to have only one agent to speak at a time?
- How to get the most from limited bandwidth?
- Can opponent agents interfere with messages and if so how to prevent this?
- What should be communicated?

Soccer server communication questions

- How to have only one agent to speak at a time?
- How to get the most from limited bandwidth?
- Can opponent agents interfere with messages and if so how to prevent this?
- What should be communicated?

An example protocol