Introduction to Multi-Agent Programming

Exercise 1

Organization, Introduction to Rescue Simulation, and Exercise 1

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Organization I

- Written exercises + Programming (Rescue Simulation)

- Group of [maximum] three students
  - One group one submission

- Consultation
  - Time slot?
Organization II (today)

• An introduction to rescue simulation

• A tutorial on the simulation software
Background

• RoboCup
  – RoboCupSoccer
    • Simulation
    • Small Size
    • Middle Size
    • Four - Legged
    • Humanoid

• MAS
  – Individual
  – Coalition
Scenario

• RoboCupRescue
  – Infrastructure
  – *Simulation*
  – Virtual Robots
  – Robot

• Background
  – Earthquake
    • Polices
    • Ambulances
    • Fire brigades
    • Victims
Simulation

• Simplified
Architecture

Simulators
- Blockade
- Traffic
- Collapse
- Fire

KERNEL

UDP/IP

Geographic Information-System (GIS)

Civilians

Viewer

Field agents
Stations
The Running System

<table>
<thead>
<tr>
<th>Service</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Brigade</td>
<td>15</td>
</tr>
<tr>
<td>Police Force</td>
<td>15</td>
</tr>
<tr>
<td>Ambulance</td>
<td>8</td>
</tr>
<tr>
<td>Civilian</td>
<td>90</td>
</tr>
<tr>
<td>Fire Brigade Center</td>
<td>1</td>
</tr>
</tbody>
</table>

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<tbody>
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<td>Ambulance Center</td>
<td>1</td>
</tr>
<tr>
<td>Police Force Center</td>
<td>1</td>
</tr>
<tr>
<td>Refuge</td>
<td>2</td>
</tr>
<tr>
<td>Ignition points</td>
<td>6</td>
</tr>
</tbody>
</table>

SUNTORI: Kobe 2008 2nd place
Organization II (today)

- An introduction to rescue simulation
- A tutorial on the simulation software
  1. Get the software
  2. Compile the software
  3. Run the simulation
  4. Exercise 1
Step 1

- Linux systems
  - Packages
    - java
    - C/C++

- Get the source package
  - Exercise Page
Step 2

- Directories
  - boot, docs, maps, programs
  - Compile the software

$> cd rescue/rescue-0.50.0/programs/
$> make
  - Warnings …
  - Errors…
Step 3

- Run the program

  `> cd rescue-0.50.0/boot`
  `> ./allNoEarthquake.sh`
  `> ./sampleexplorationagents.sh`
  `> ./killall.sh`

- Environment variable

  `export RESCUE KERNEL HOME=[your path to]/rescue-0.50.0`
Simplified Simulation

• No disaster (earthquake, fire, blockade, collapse etc.)
• Only ambulance, map, civilians (targets)
• Ground truth are defined in text files
  maps/Kobe_expl/civstates.txt  targetlocs.txt
Step 4

• Exercise
  – Log files
    in the boot directory.
  – Create a Java package for your group
    • rescuecore.map09 → rescuecore.grp[X]
      – Put your code into your group directory
      – Clone the files in map09
      – Replace map09 in the code to grp[X]
      – Insert grp[X] following map09 in file rescuecore/Makefile
      – make rescuecore
      – Change boot/sampleexplorationagents.sh