Planning Competition for Logistics Robots In Simulation

MERS Enterprise

Tim Niemueler
Knowledge-based Systems Group, RWTH Aachen University

Erez Karpas
Technion – Israel Institute of Technology

Tiago Vaquero and Eric Timmons
Massachusetts Institute of Technology
RoboCup Logistic League - Simulator

- Readily integrated 3D simulation with environment agency
- Based on software stack released by RoboCup Team Carologistics
Planning and Execution Framework

Reference Box → Goals → Task-Level Planning Executive (Enterprise) → Domain Model

Task-Level Planning Executive (Enterprise) → Plan Status → Execution Monitoring System

Execution Monitoring System → Plan → State Estimator

State Estimator → Behaviors → Execution Request → Execution Status

Execution Status → Behaviors/Skills → Robot Software Stack

Robot Software Stack → Behaviors/Skills → Simulation Environment
Inspiration: Star Trek
Enterprise

Goal-directed Executive

- Model (PDDL)
- Predicate Estimator
- Activity Planner (PDDL Planner)
- Execution Monitoring System (Pike)

Mission Goals

Status

Robot's Activity Manager

- Navigate
- Activity 3
- Activity 5
- Activity 7
- Activity 2
- Activity 4
- Activity 6

Command status

Command Goals
Enterprise Endevors
Running Enterprise
1) Run:

$ simstick-update

then

$ ./gazsim.bash -x start -n 3 -r -t --ros-launch-main rcll_fawkes_sim:rcll_fawkes_sim_all_3robots.launch

2) Start game

3) Run:

$ launch-enterprise