

Factory Simulation

Multi Agent System (MAS)

- Factory simulation where multiple robot agents pick-up and deliver packages.
- Robots may run low on battery and reach the nearest charging station or malfunction and ask other robots for assistance and battery exchange
- The system self-maintains itself via mutual interactions between its components (robots repair each other and recharge their battery to constantly restore standard working conditions).
- The system eventually restores its standard working conditions upon internal perturbations, where queues of robots pick up and deliver packages autonomously.

BDI Agents

- Belief
 - charging stations locations
 - battery level
 - carrying a package
 - ...
- Desire
 - deliver a package at specified location
 - repair a malfunctioning robot
 - ...
- Intention
 - plan to reach the objectives
 - ...

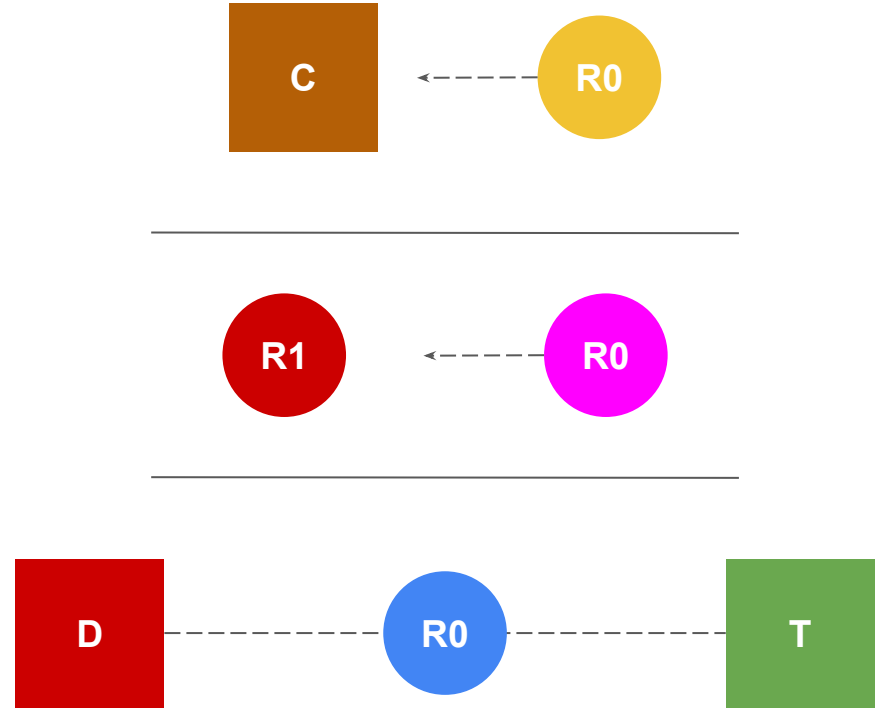
Autonomy

- achieve goals independently
- control is encapsulated and not directly controlled from outside agent's boundaries
- decides autonomously, based on its knowledge about the world, how to achieve its goals



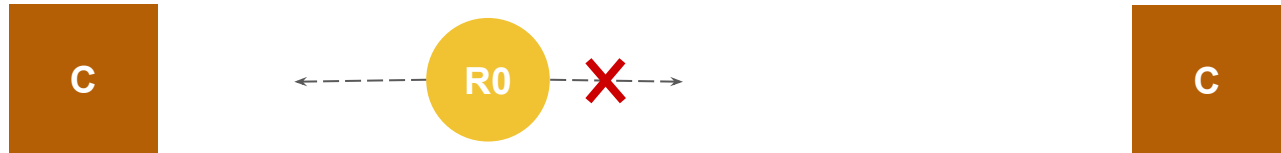
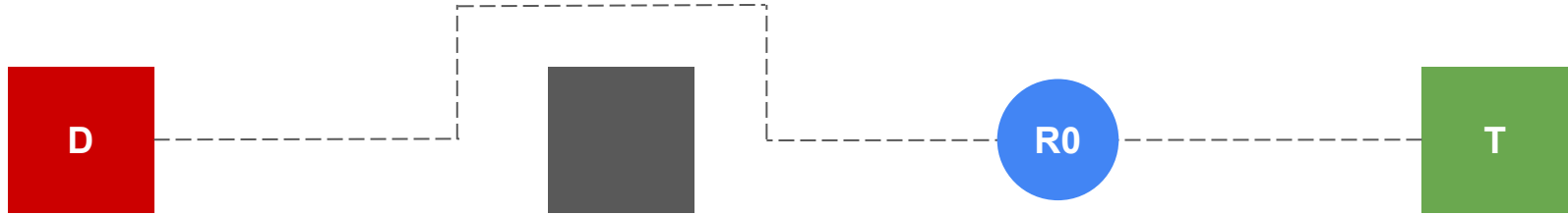
Goal-oriented & Proactivity

1. reach charging stations
2. robot assistance
3. package delivery



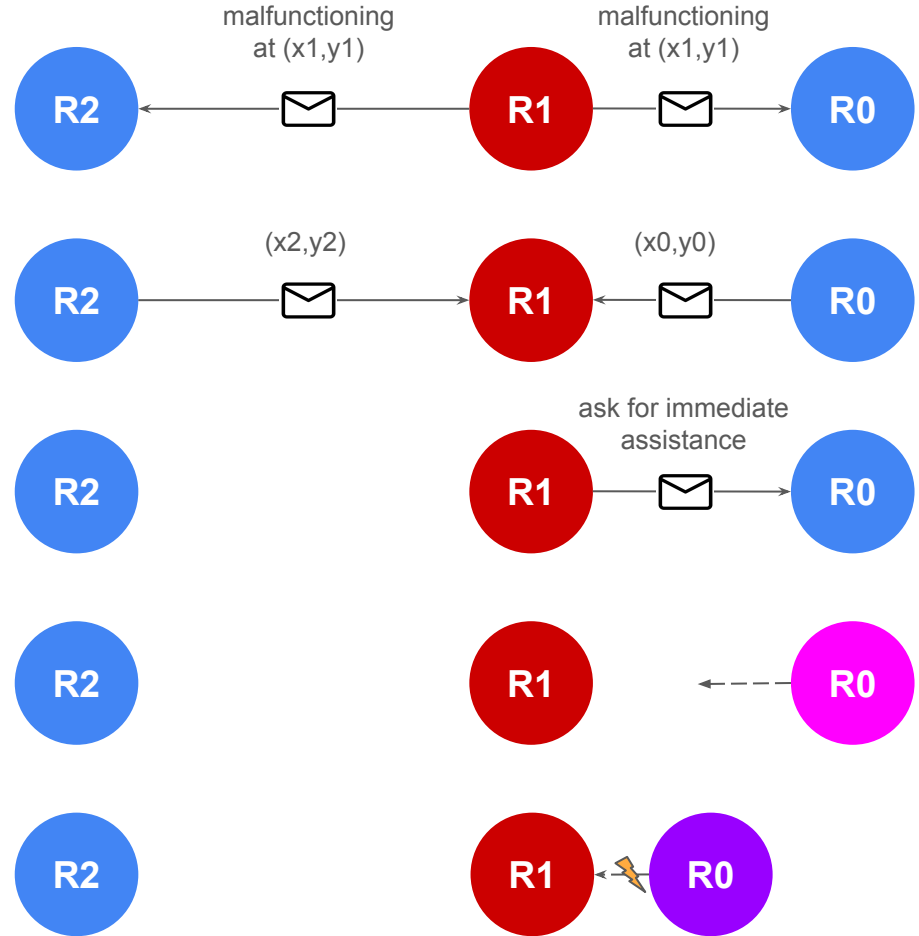
Situatedness & Environment

- obstacle avoidance (i.e.: walls, other robots, humans)
- move towards closest charging station



Interactivity

- **ask closest robot for assistance**
- **battery exchange between robots**
- ask charging stations for their location
- human asks robots their status
- ...



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