



Embedded Motion Control

4SC020

Design Group 4

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Where innovation starts

Goal

- **Solve maze autonomously and as fast as possible**

Task context

- **Task control feedback**
 - Check position of robot with position of the created map. Prevent the robot from collisions with the walls or other obstacles
- **Task control feedforward**
 - Determine the new place to go.
- **Task monitor**
 - Control the exploration of the maze and prevent the robot from getting stuck in a loop

Skill context

- **Mapping (Particle filter)**
- **Trajectory planning**
- **Maze solving (Trémaux algorithm)**
- **Detect door**
- **Recognizing and walking through open spaces**
- **Determine position in world model**

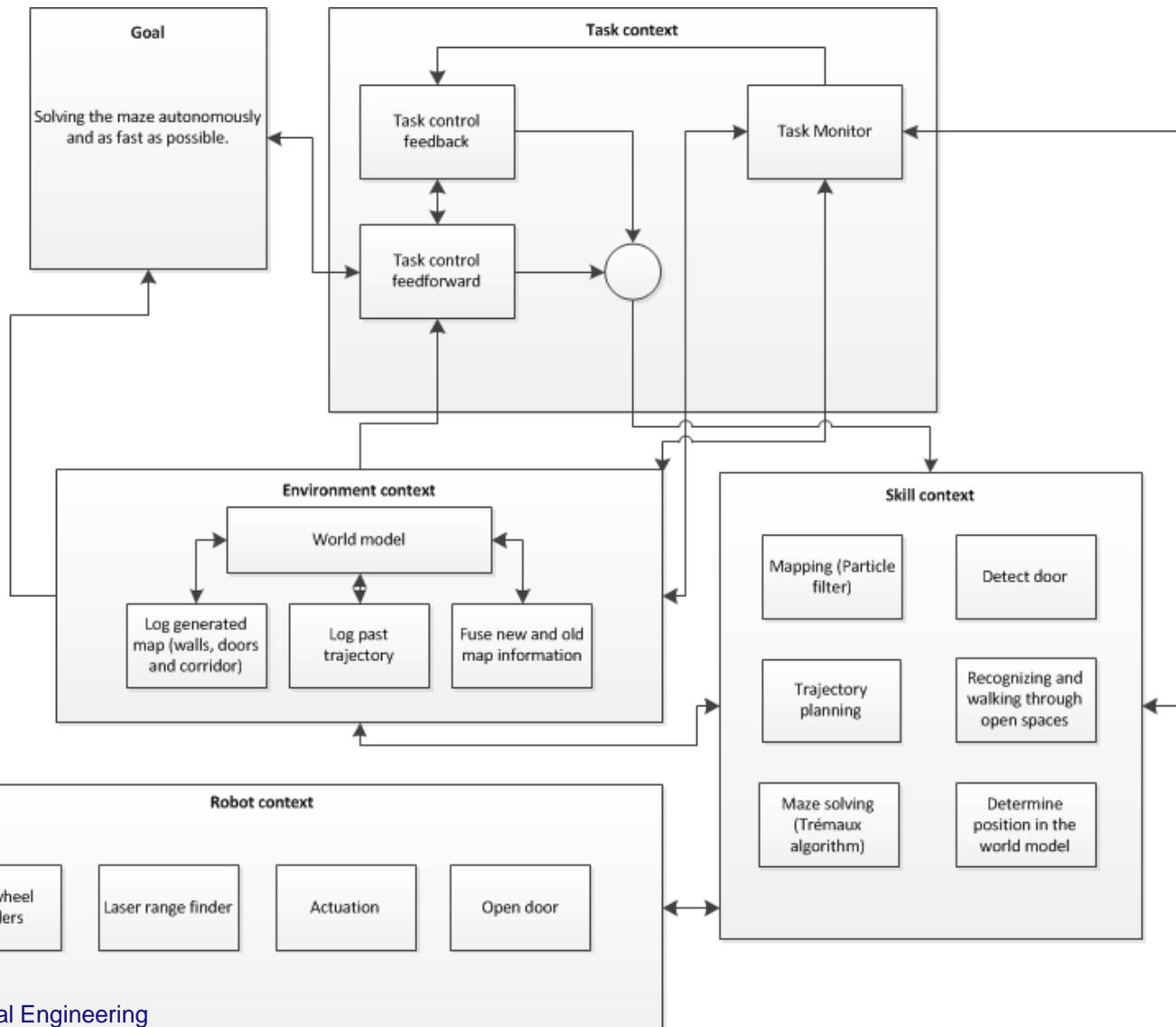
Environment Context

- **World model**
 - **Log generated map**
 - **Log past trajectory**
 - **Fuse new and old map information**

Robot context

- **Omni wheel encoders**
- **Laser range finder**
- **Acutation**
- **Opening door**

World model



C++

- **Contain all components**
- **Task manager, switch between tasks**