Follow me behavior (control part)

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What is a robot ?

Robot = *mechatronic system with perception, decision and action skills,* capable of carrying out *different tasks in the real world, in an autonomous way.*

Robot = artificial machine

	Body	*Robot*
Perception:	*Sensors*	Sensors
Décision:	*Brain*	Computer
Action:	*Members*	Actuators

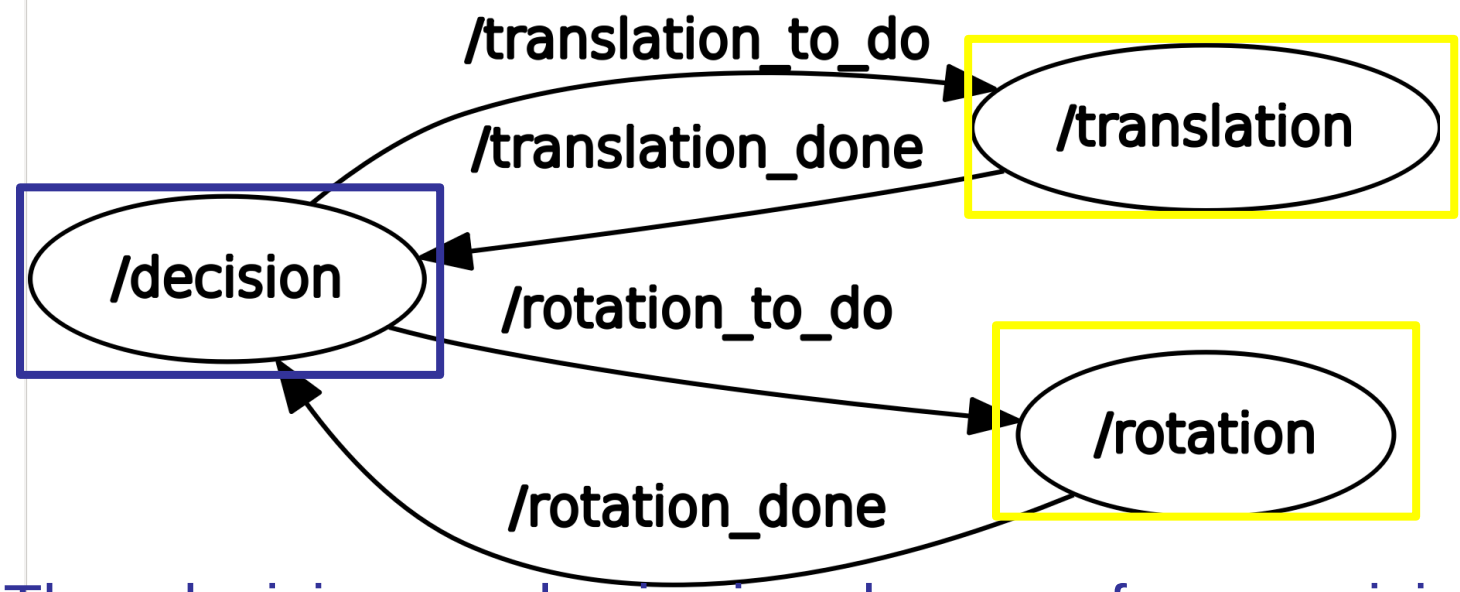
Autonomy: capacity to understand the current situation and to react in an approprious way taking into account the tasks to carry out.

Outline

1. Action nodes
2. Rotation node
3. Translation node

Action nodes for a follow me behavior

- Robair has to perform 2 kinds of actions:
  1. A rotation to be face to the goal;
  2. A translation to be closer of the moving person detected.
- These 2 actions are completely independent, so we will implement a PID controller for each action;



- The decision node is in charge of supervising the execution of these 2 actions;

Outline

1. Action nodes
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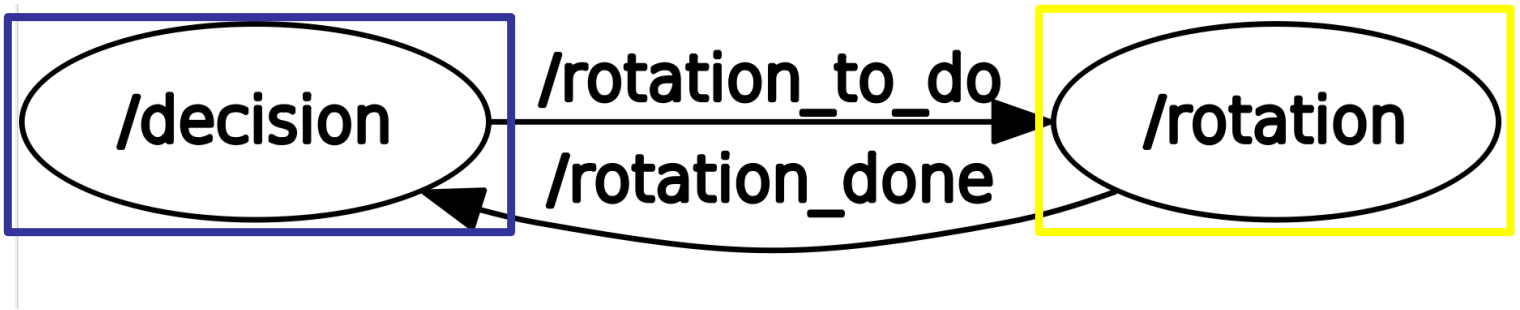
Rotation node for a follow me behavior

- First, we receive a /rotation_to_do;
- We have to perform this rotation starting at our current orientation;
- We have to control the rotation speed of robair to go from the current_orientation to the (current_orientation + rotation_to_do) orientation;
- The /rotation_done is estimated by odometry.



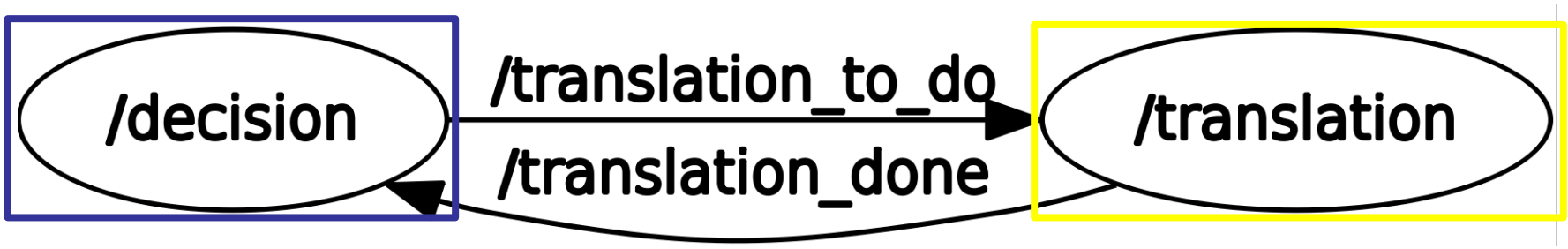
- When robair has performed the /rotation_to_do, we send the /rotation_done has an ack to the decision_node.

Outline

1. Action nodes
2. Rotation node
3. Translation node

Translation node for a follow me behavior (1/2)

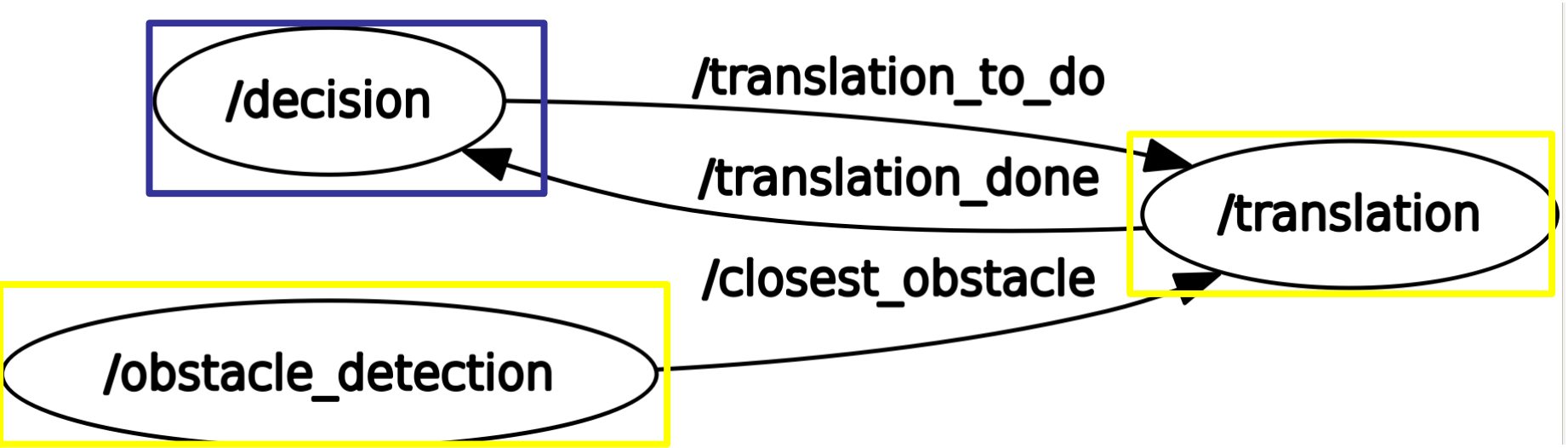
- First, we receive a /translation_to_do;
- We have to perform this translation starting at our current position;
- We have to control the translation speed of robair to go from the current position to the final position;
- The /translation_done is estimated by odometry.



- When robair has performed the /translation_to_do, we send the /translation_done has an ack to the decision_node.

Translation node for a follow me behavior (2/2)

- As soon as robair will start to move, we have to ensure its safety;
- At each time, the obstacle_detection node is in charge to determine the position of the closest obstacle on the path of robair;
- If this obstacle is too close to robair, we will stop the translation.



- The obstacle_detection node is provided, but you have to run it in a terminal.