Method for planning the trajectories of mobile objects in conditions of uncertainty

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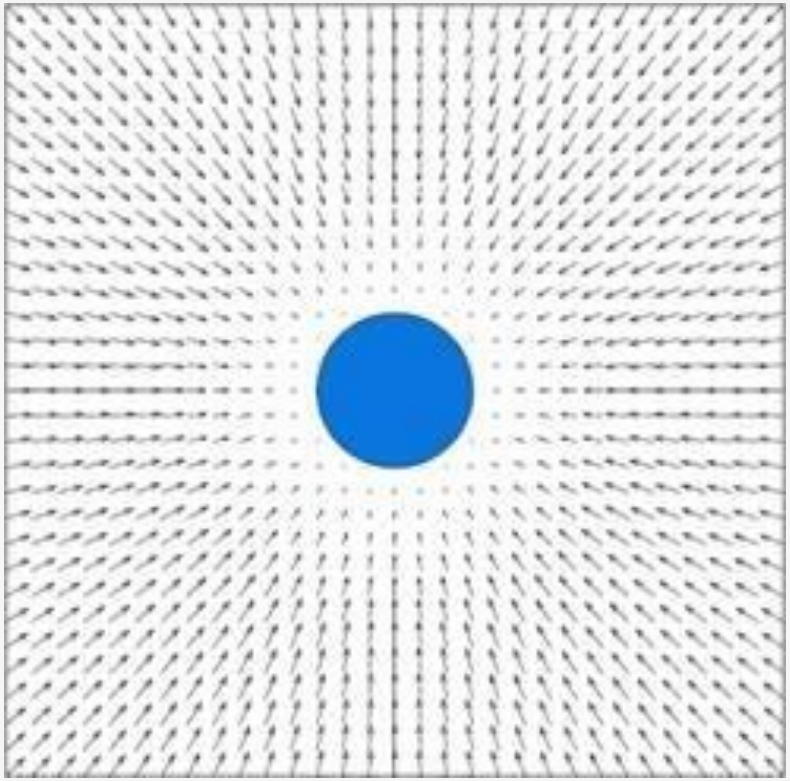
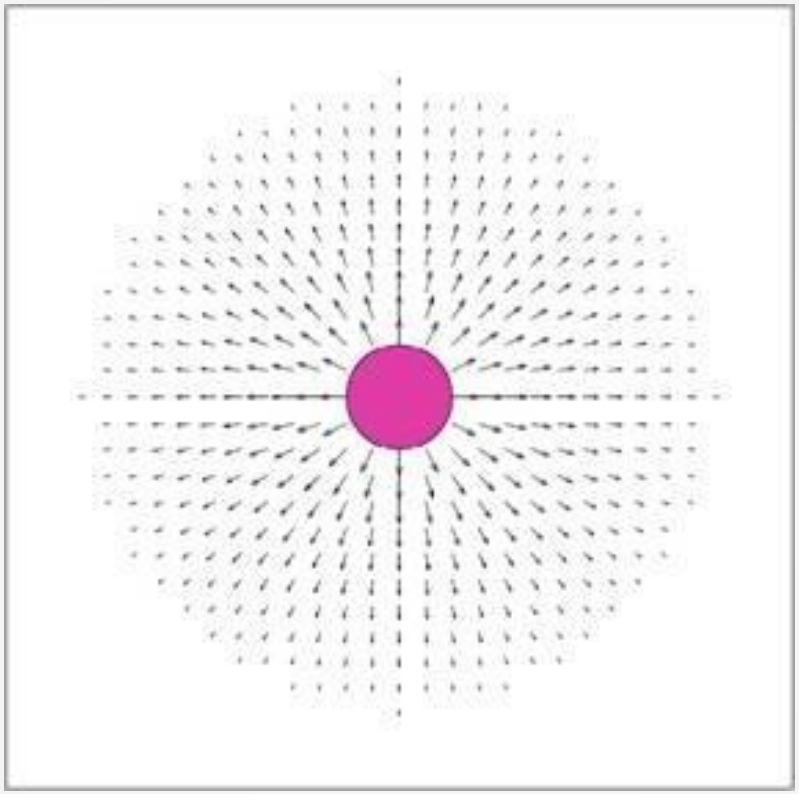
Method of potential fields



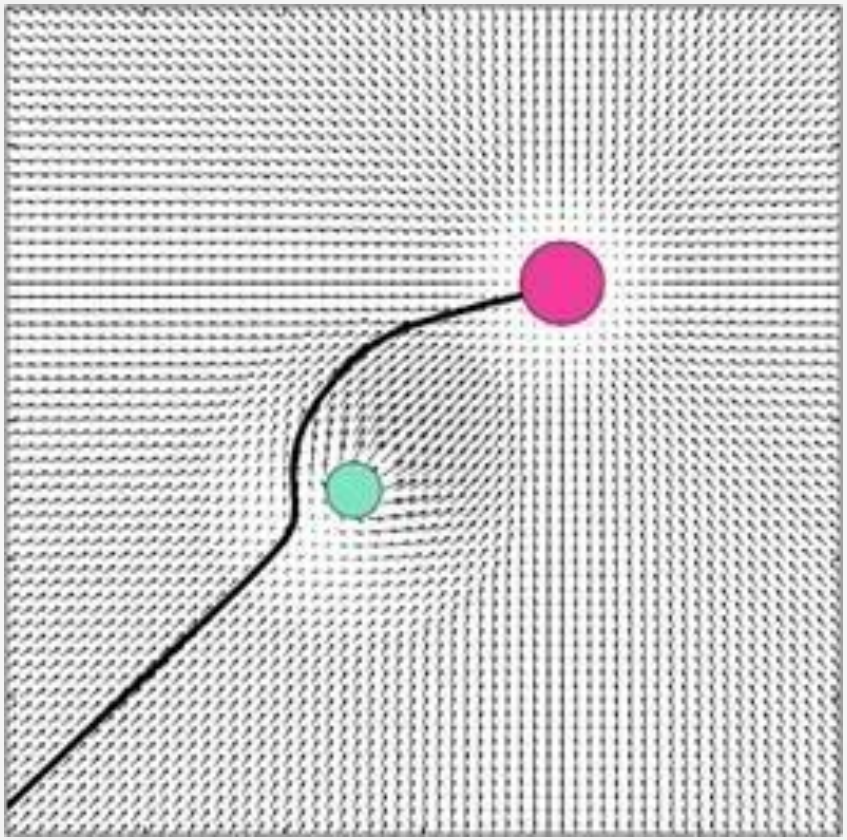
The robot must move in accordance with this force.

Method of potential fields



The robot approaches the obstacle, the repulsive force will act on it, pushing the robot away from the obstacle.

Method of potential fields



- Robot pushes back from the obstacle and goes to the goal.

Method of potential fields

The total potential field:

$U_g(q)$ – the potential field of the target point
$U_o(q)$ – the potential field of the obstacle field

The induced force is calculated:

U(q) –the potential field

r(q,g) - the Euclidean distance between a robot in a state q and a goal
r(q,o) – the Euclidean distance between a robot in a state q and the nearest point to the obstacle

Method of potential fields

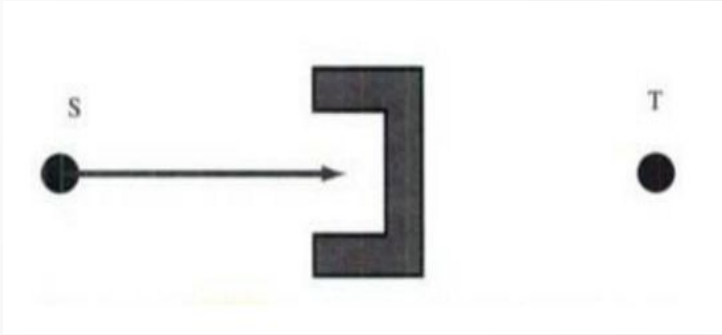
Advantages

* It is able to hold the robot at any point of the simulated environment.

- *Vectors of resistance are calculated only by the indications of the sensors at the current time.

Disadvantage

* High probability of getting into the local minimum.



Thank you for your attention!