

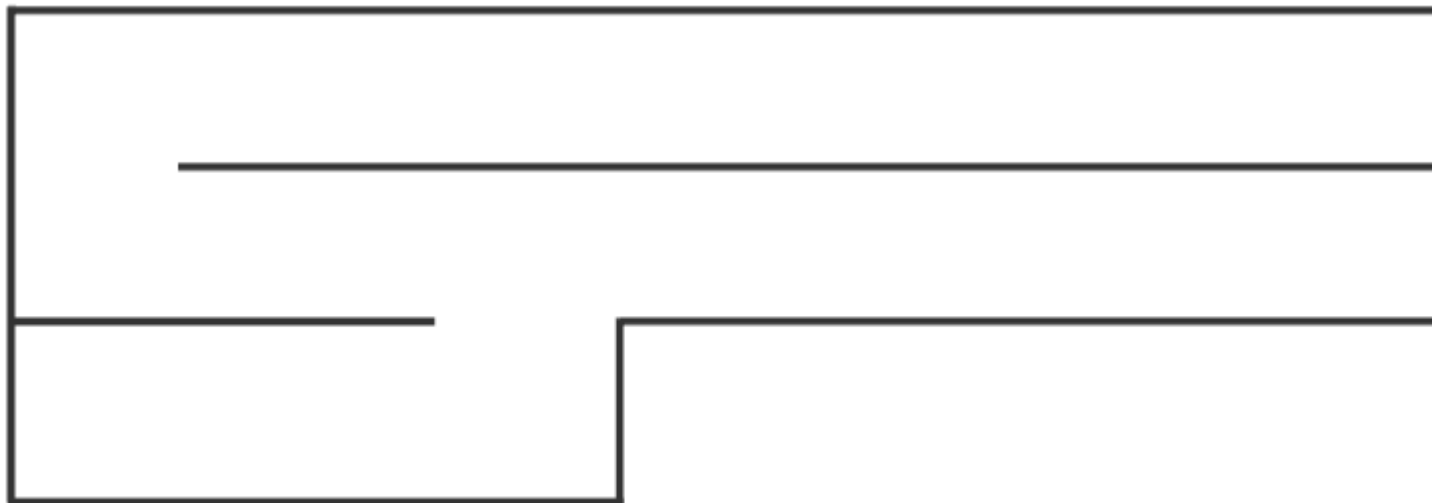
Insper

Robótica Computacional

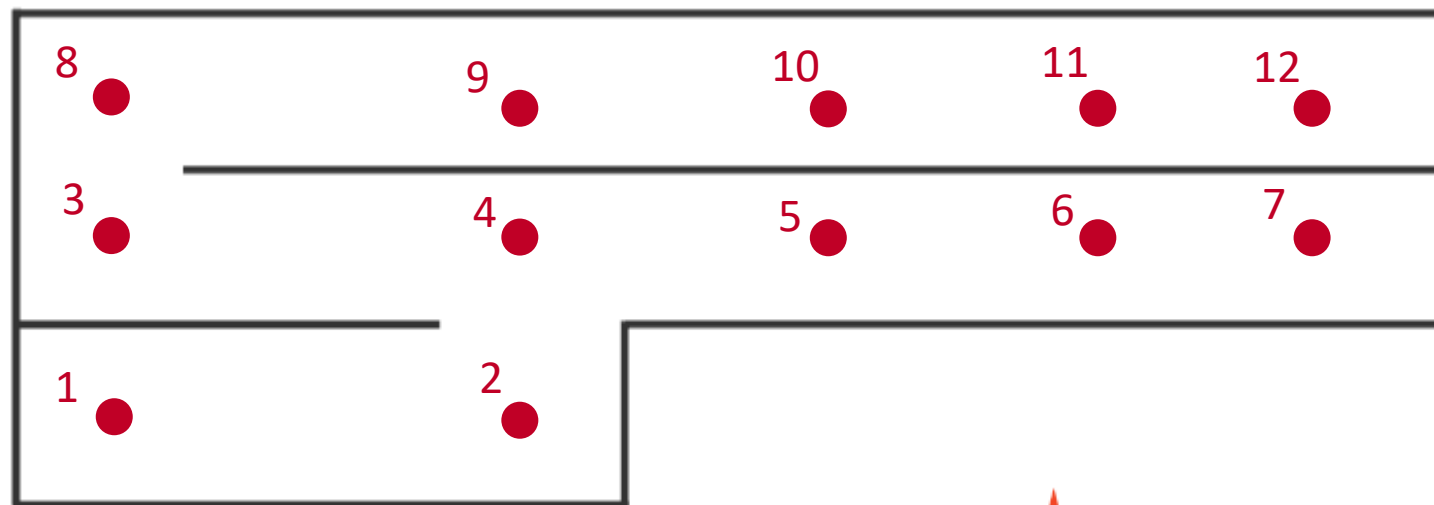
SLAM

Localização

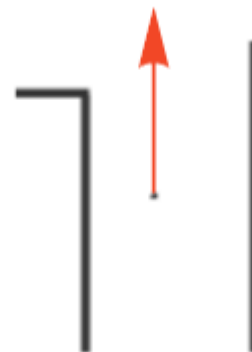
Dado o seguinte mapa



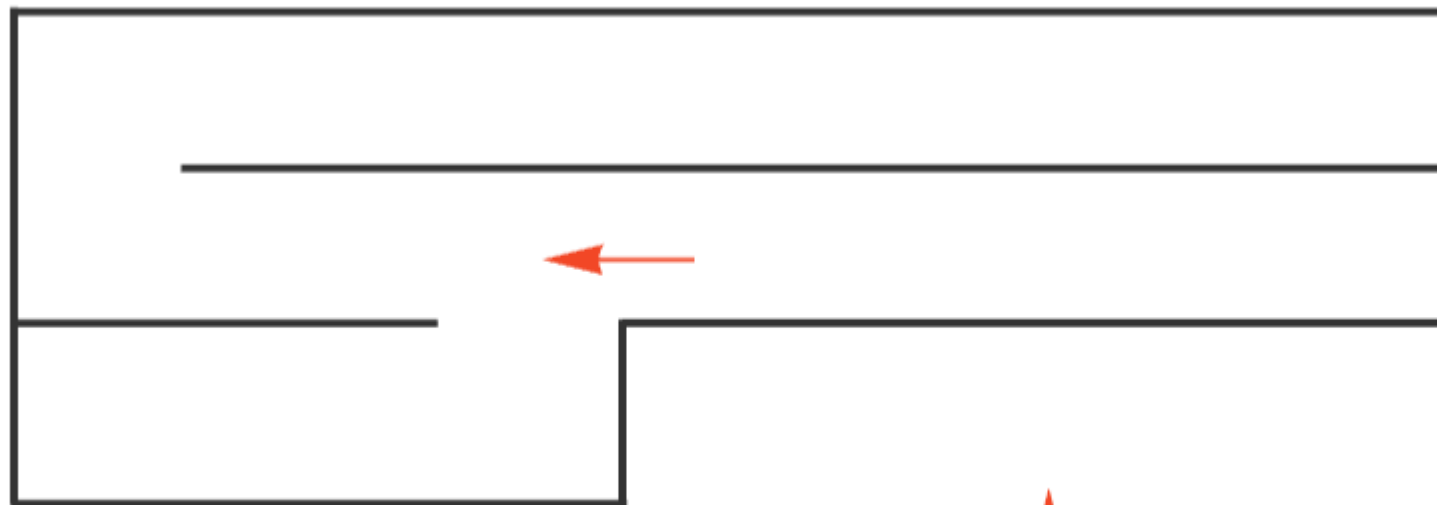
Onde Está o robô?



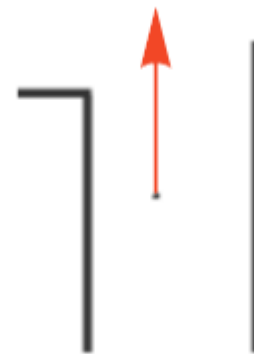
Leitura do Laser:



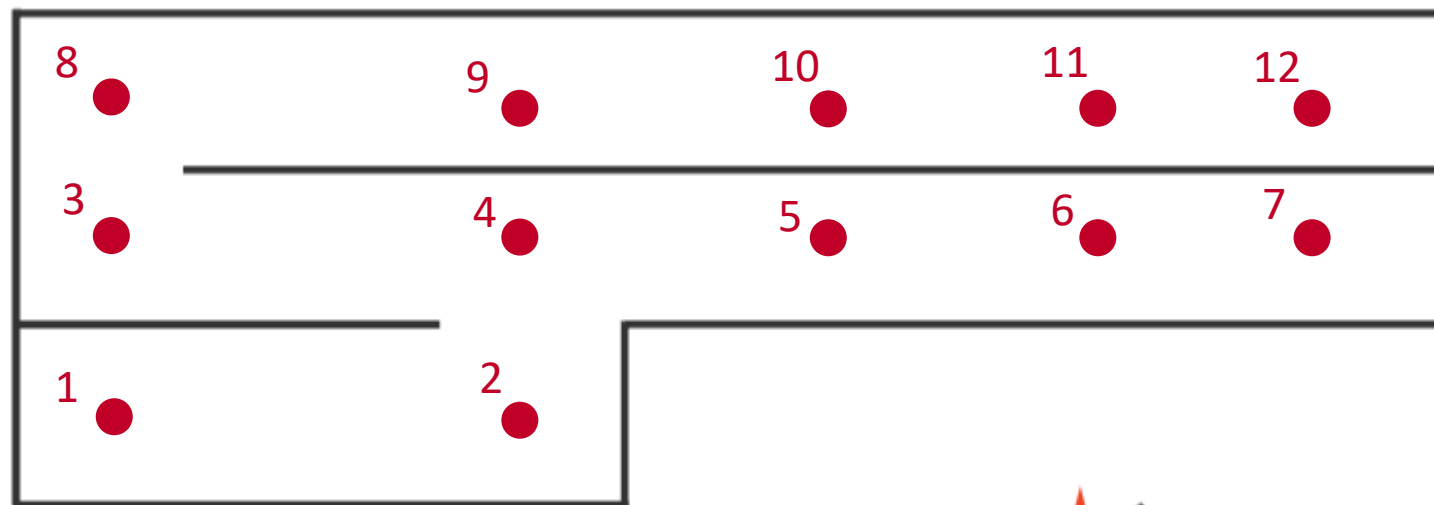
Onde Está o robô?



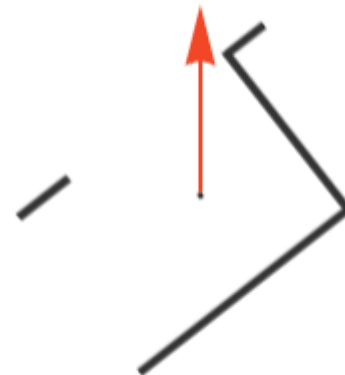
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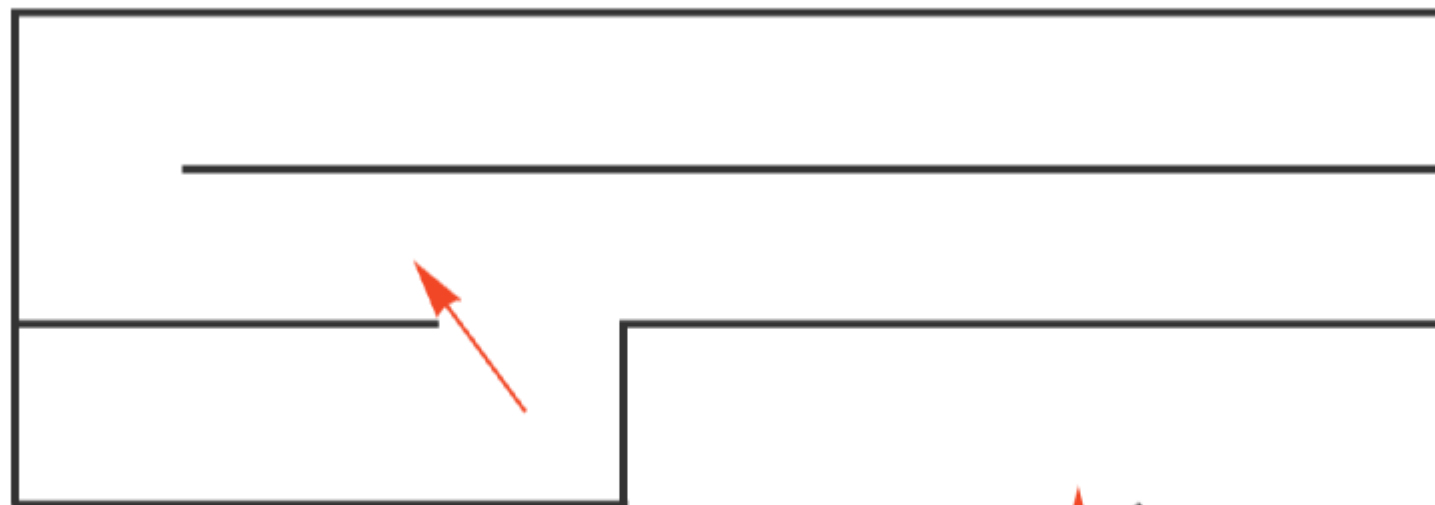
Onde Está o robô?



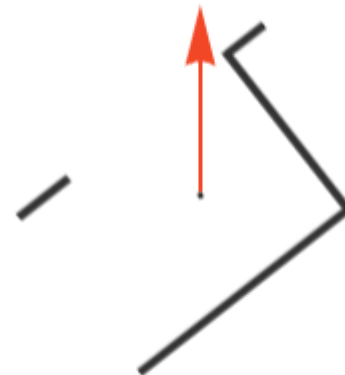
Leitura do Laser:



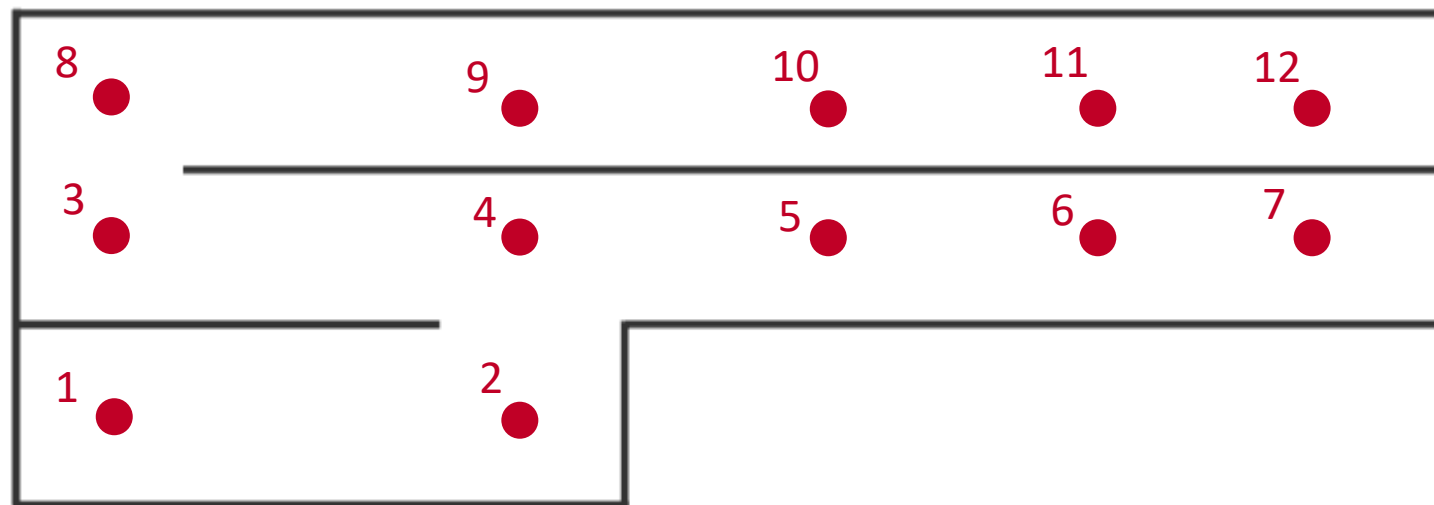
Onde Está o robô?



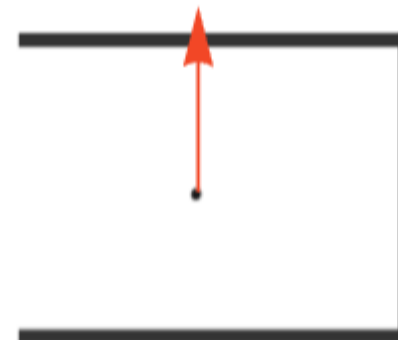
Leitura do Laser:



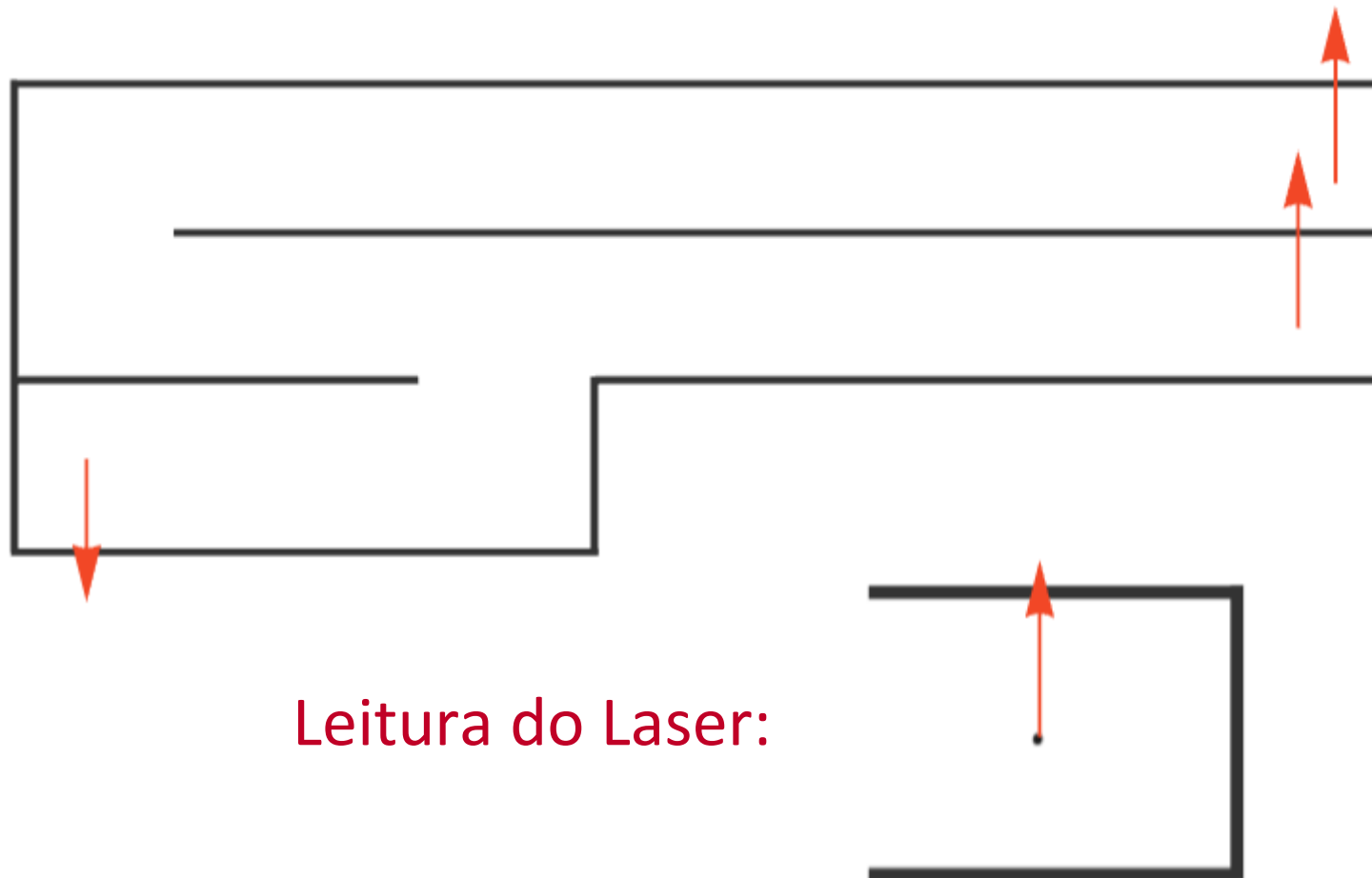
Onde Está o robô?



Leitura do Laser:

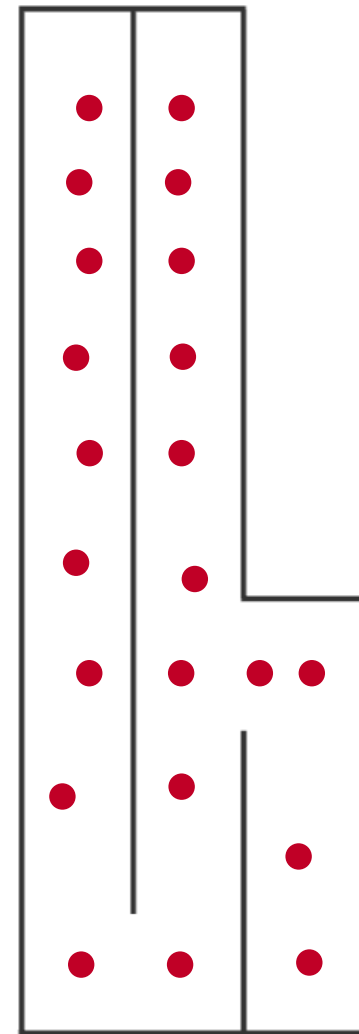


Onde Está o robô?



Monte Carlo Localization

1. Recebe a Leitura do Sensor (Laser 2D)
2. Seleciona N pontos de localização hipotéticos (partículas)
3. Simula-se qual seria a leitura do laser para cada partícula
4. Calcula-se o erro entre a leitura real e simulada de cada partícula
5. Faz um "resampling", onde as melhores partículas são mantidas e replicadas.
6. Algoritmo tende a convergir à posição do robô.
7. Se souber a posição anterior do robô o algoritmo é simplificado
 1. Isso resulta método – AMCL (Adaptative Monte-Carlo Localizer)

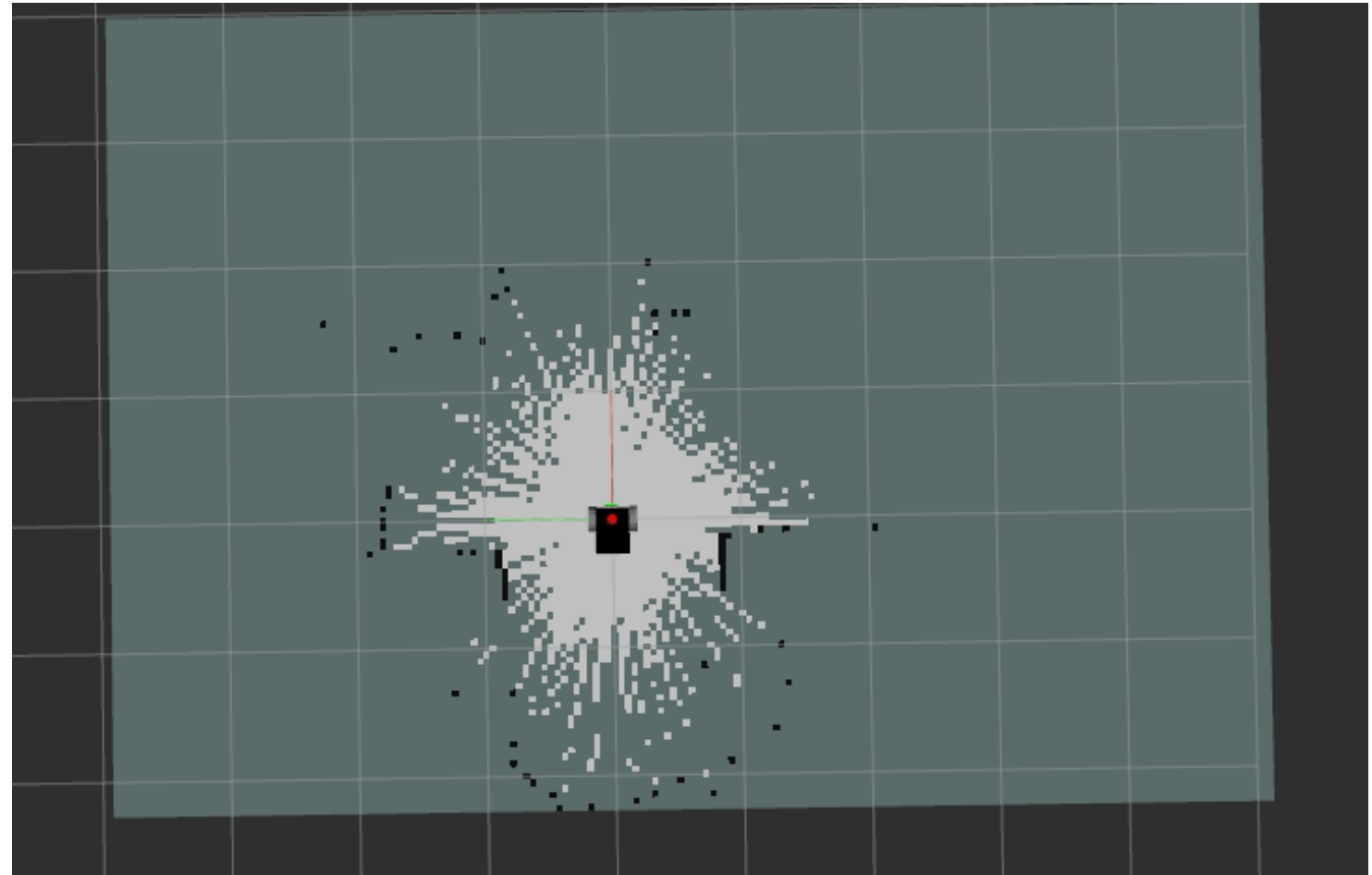


Insper

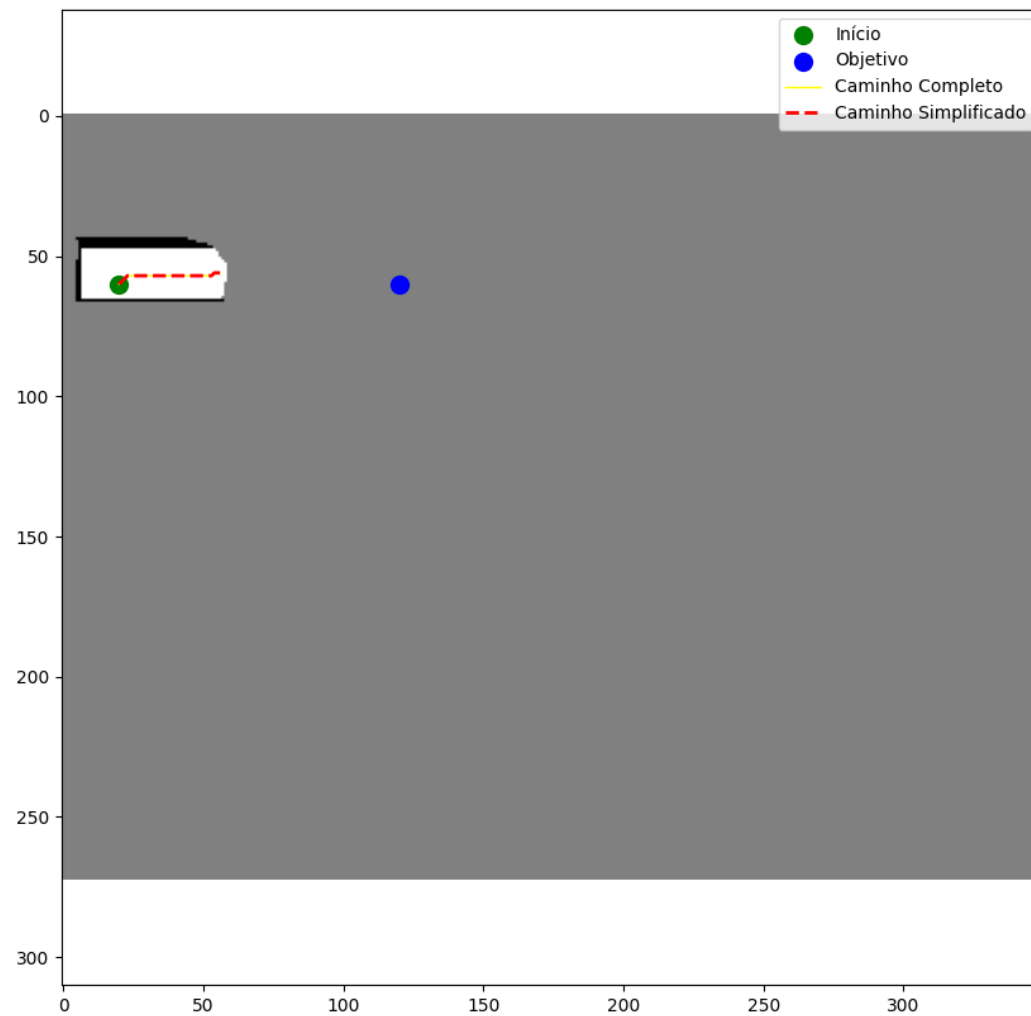
SLAM **(Simultaneous Localization and Mapping)**

Mapa de Ocupação

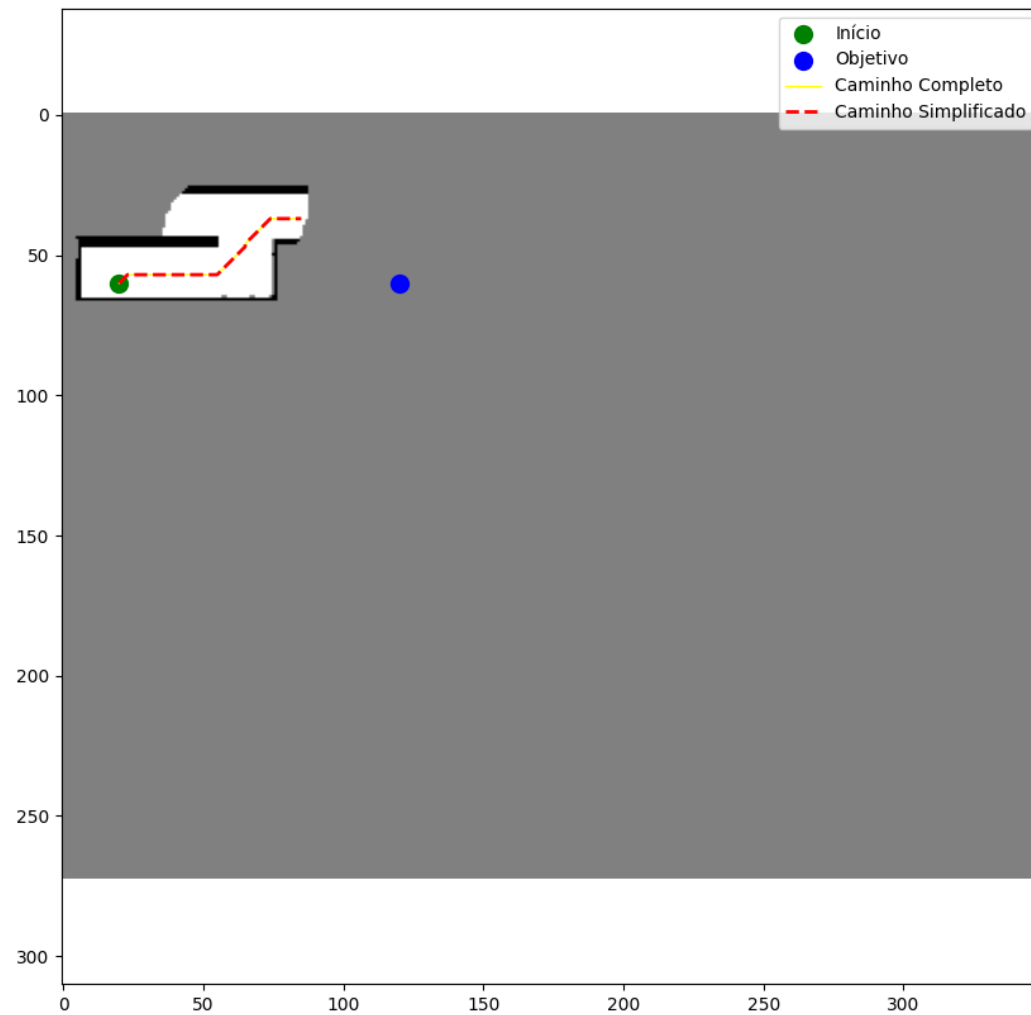
1. Cria uma grade 2D
2. Atribui os seguintes valores:
 - Livre
 - Ocupada
 - Desconhecida
3. Para cada leitura do Laser 2D, cada célula recebe uma probabilidade de estar ocupada.
 - Obstáculos aumenta a probabilidade
 - Livre reduz a probabilidade



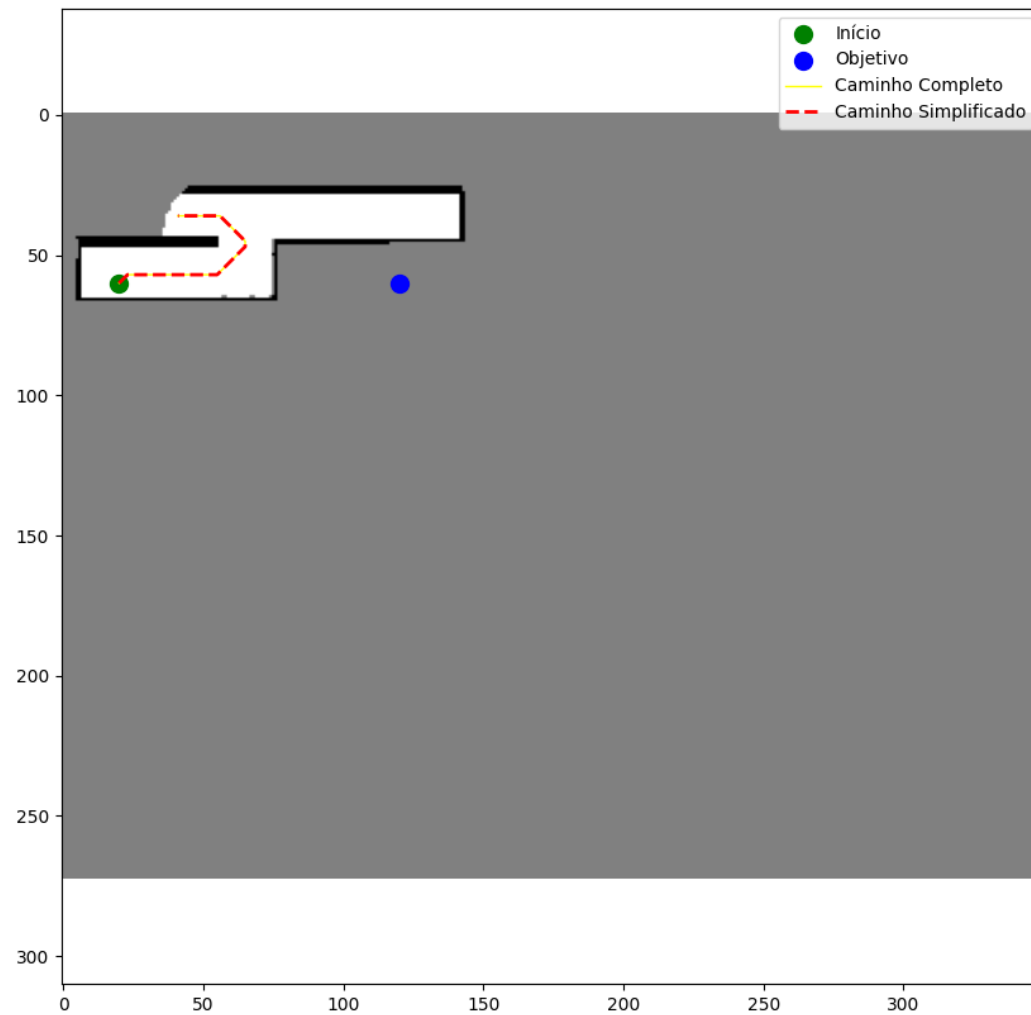
SLAM



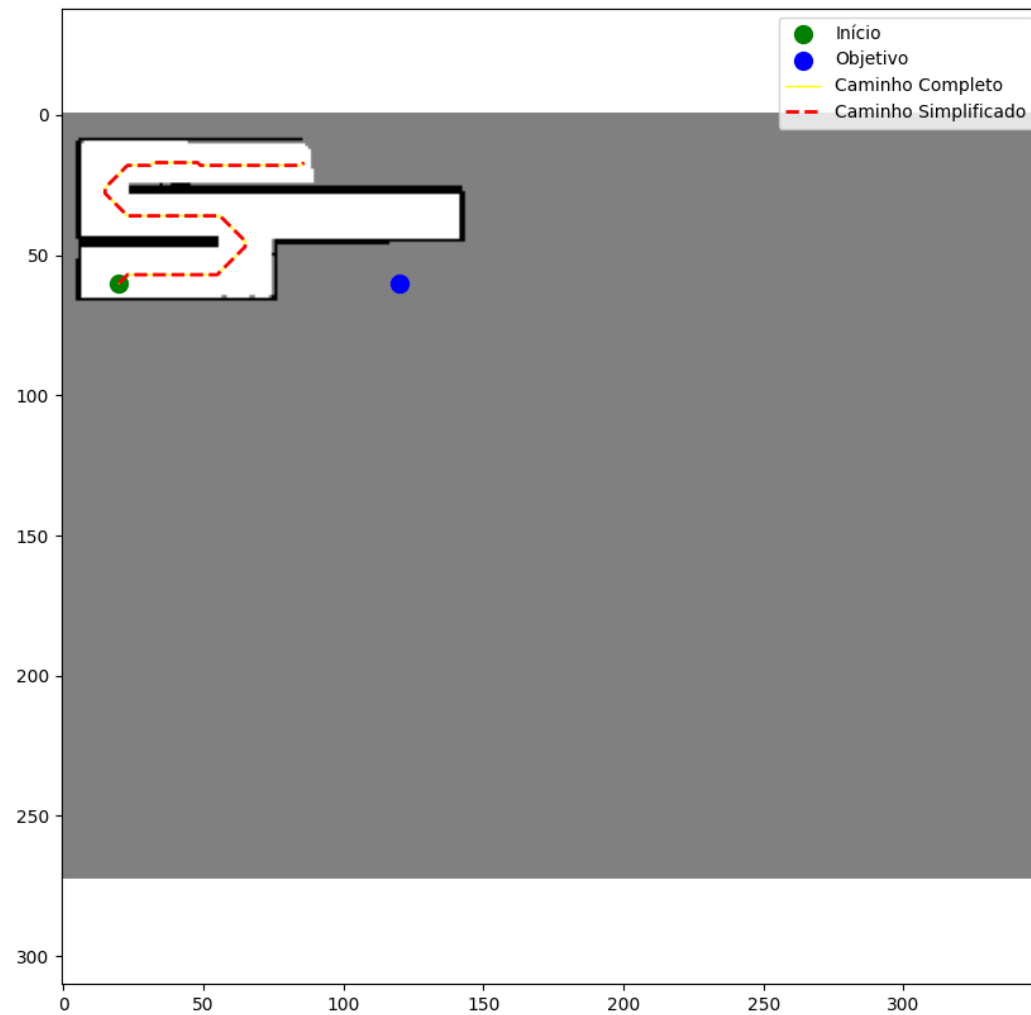
SLAM



SLAM



SLAM



SLAM

