

SAut, 2023/24

Acompanhamento semana 5

# TurtleBot3 - Mapping

Grupo 13 - L06 - 6ª feira

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# Código antigo

```
def draw_map(ranges, map, pose):
    beginning_pixel = circular_coordinates2pixel(pose, [0, 0])

    for index, distance in enumerate(ranges):
        if distance > 0.12 and distance < 3.0:
            ending_pixel = circular_coordinates2pixel(pose, [distance, math.radians(index)])
            line = bresenham(beginning_pixel, ending_pixel) # line does not include ending pixel

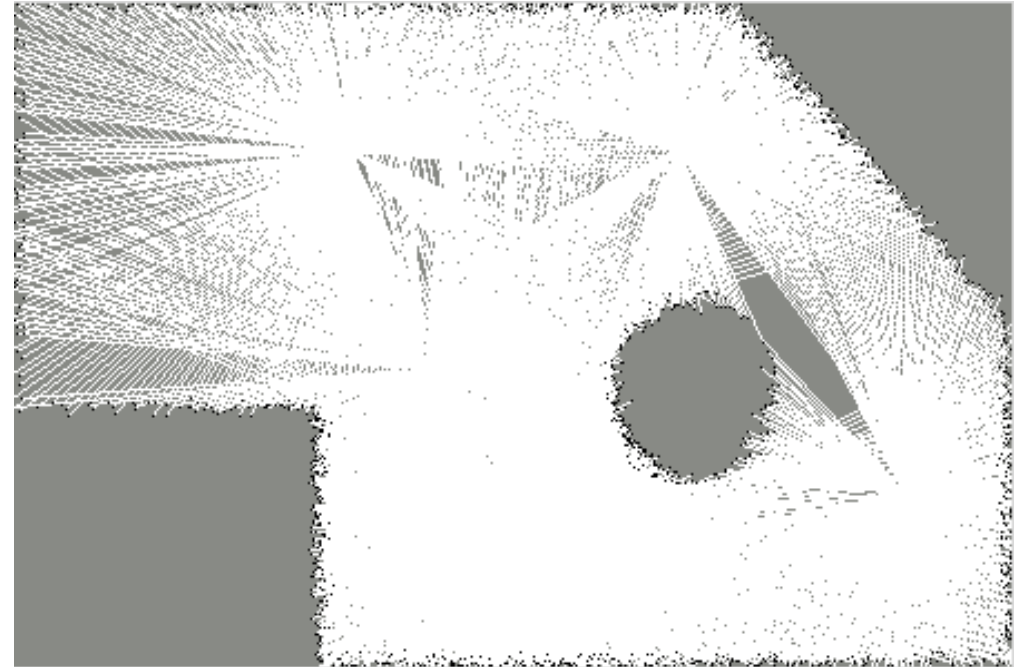
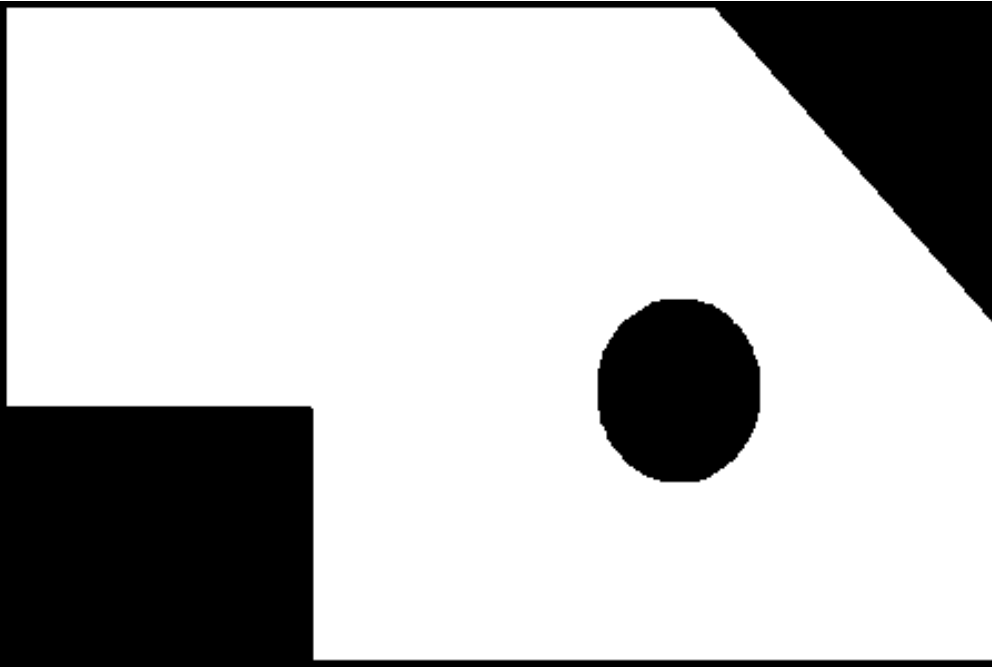
            for pixel in line:
                # paint the cells between current pose and ending cell (excluding the latter) white (they are empty)
                map.create_rectangle(pixel[0], pixel[1], pixel[0] + 1, pixel[1] + 1, fill="white", outline="")

            # paint the ending cell black (it is occupied)
            map.create_rectangle(ending_pixel[0], ending_pixel[1], ending_pixel[0] + 1, ending_pixel[1] + 1, fill="black", outline="")
```

# Código Recente

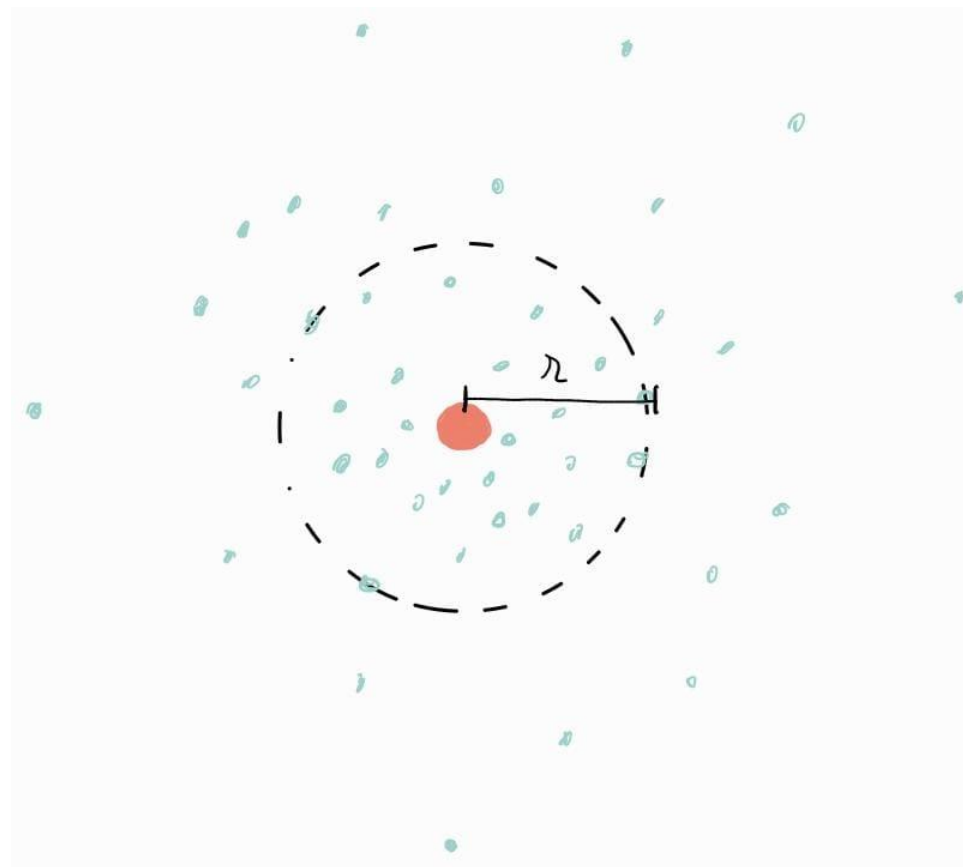
```
def draw_map(map):  
    for cell in l_i:  
        if cell.log_odds > UPPER_THRESHOLD:  
            # occupied cell  
            map.create_rectangle(cell.x, cell.y, cell.x + 1, cell.y + 1, fill="black", outline="")  
        elif cell.log_odds < LOWER_THRESHOLD:  
            # free cell  
            map.create_rectangle(cell.x, cell.y, cell.x + 1, cell.y + 1, fill="white", outline="")
```

# Alteração no micro-simulador

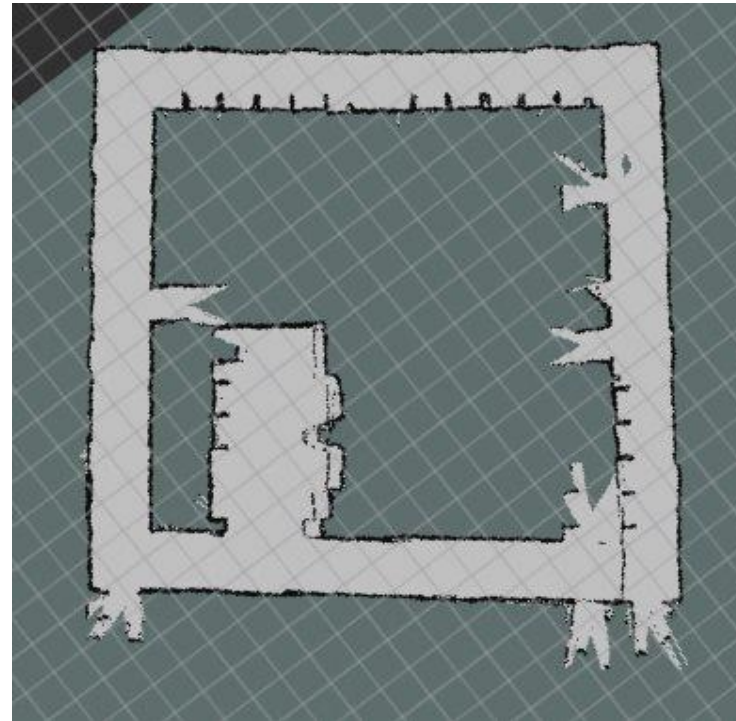


Upper threshold – 0.60, Lower threshold – 0.40

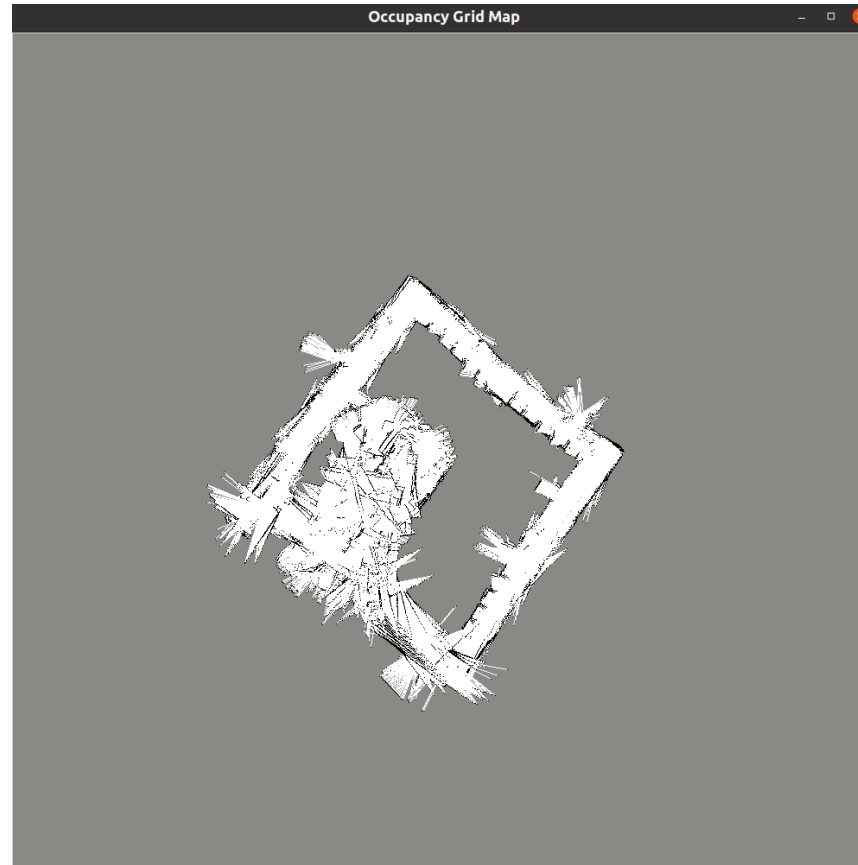
# Alteração no AMCL



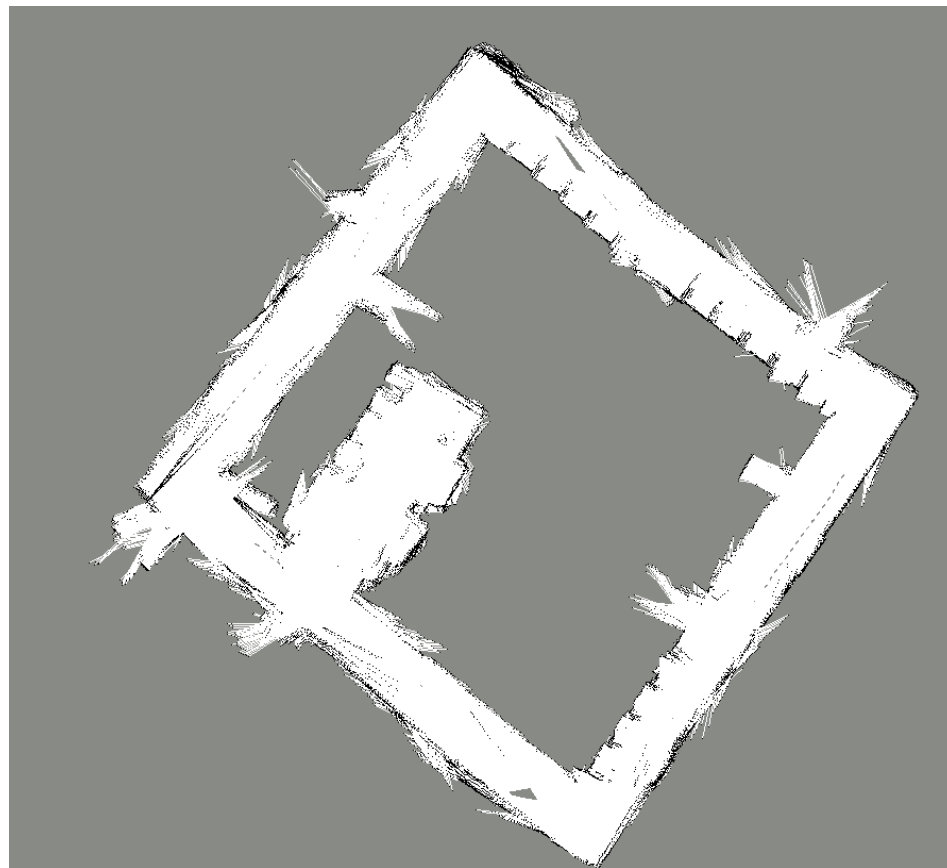
- Bag -> piso5.bag
- Mapa -> The\_Map.yaml



Cell\_size = 5 cm, Raio = 10 cm

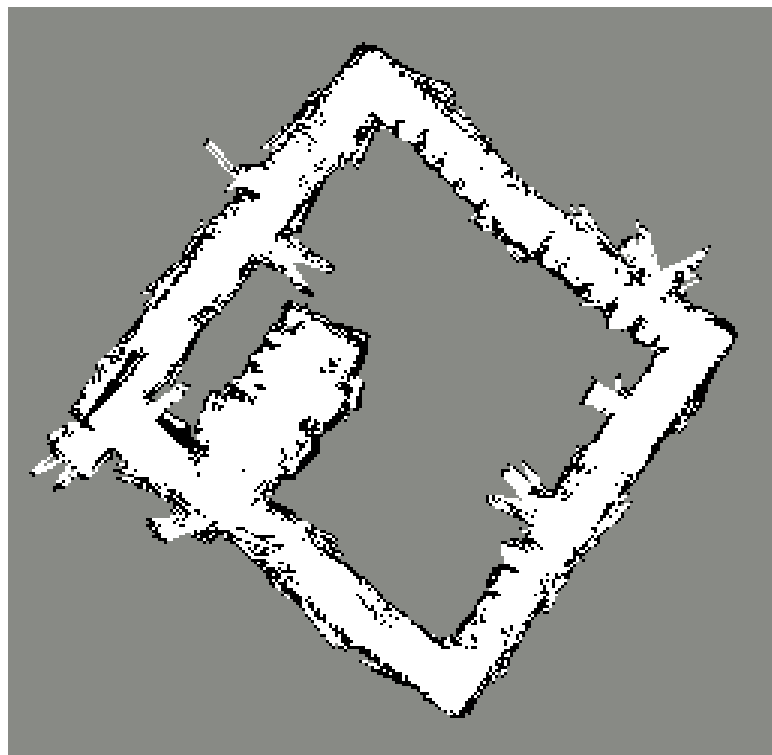


Cell\_size = 3 cm

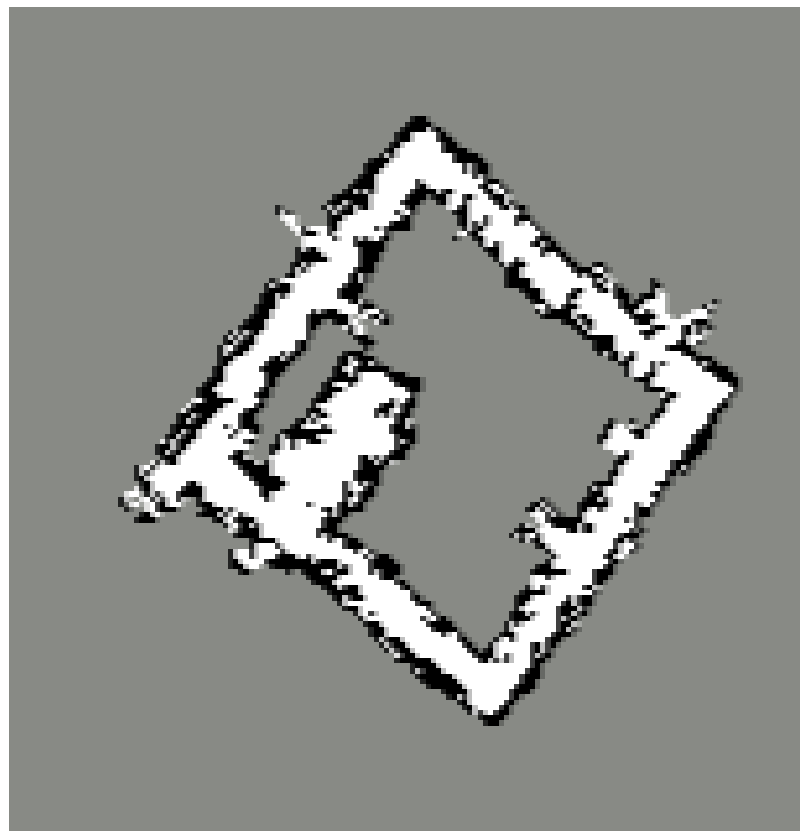




Cell\_size = 10 cm



Cell\_size = 20 cm



# Estrutura da apresentação final

- Referência aos algoritmos utilizados e às suas funções
- Aprofundar OGM (implementação)
- Explicar *inverse\_sensor\_model* (e algoritmo de Bresenham)
- Resultados do microsimulador (mapa desenhado e Gazebo)
- Resultados com dados reais
- Análise quantitativa (tamanho das células e *thresholds* de probabilidade)