The University of Western Australia
Dept. of Electrical & Electronic Engineering
Prof. Thomas Bräunl

Mobile Robots

AUTO4508

Lab Assignment 5 – *Group* – Brushfire **Points: 10**

Implement the Brushfire algorithm for a given environment in occupancy grid format.

2	2	2	2	2	2	2	2	2	2	2	2	2
2	3	2	2	2	2	2	3	3	3	3	3	2
2	3	2	1	1	1	2	3	4	4	4	3	2
2	3	2	1	1	1	2	3	4	5	4	3	2
2	3	2	1	1	1	2	3	4	5	4	3	2
2	3	2	1	1	1	2	3	4	5	4	3	2
2	3	2	1	1	1	2	3	4	4	4	3	2
2	3	2	2	2	2	2	3	3	3	3	3	2
2	3	3	3	3	3	3	3	2	2	2	3	2
2	3	4	4	4	3	3	2	2	1	2	2	2
2	3	4	5	4	3	2	2	1	1	1	2	2
2	3	4	5	4	3	2	1	1	1	1	1	2
2	3	4	5	4	3	2	2	1	1	1	2	2
2	3	4	4	4	3	3	2	2	1	2	2	2
2	3	3	3	3	3	3	3	2	2	2	3	2
2	2	2	2	2	2	2	2	2	2	2	2	2

EXPERIMENT 1 (2 points)

Read and display the occupancy grid as a binary QQVGA image file (1 means occupied, 0 means free).
Identify all obstacles and four walls in the image (coherent occupied pixels) and give them unique colors (identifiers). Plot the full environment with colored obstacles on the screen.

EXPERIMENT 2 (5 points)

Calculate the iterative Brushfire algorithm and print the resulting graph on screen.

EXPERIMENT 3 (3 points)

Drive the robot from start (top left) to goal (bottom right) on a collision free course, following the Brushfire route. You can use any path, not necessarily the shortest path, e.g. use ‘Wandering Standpoint’.