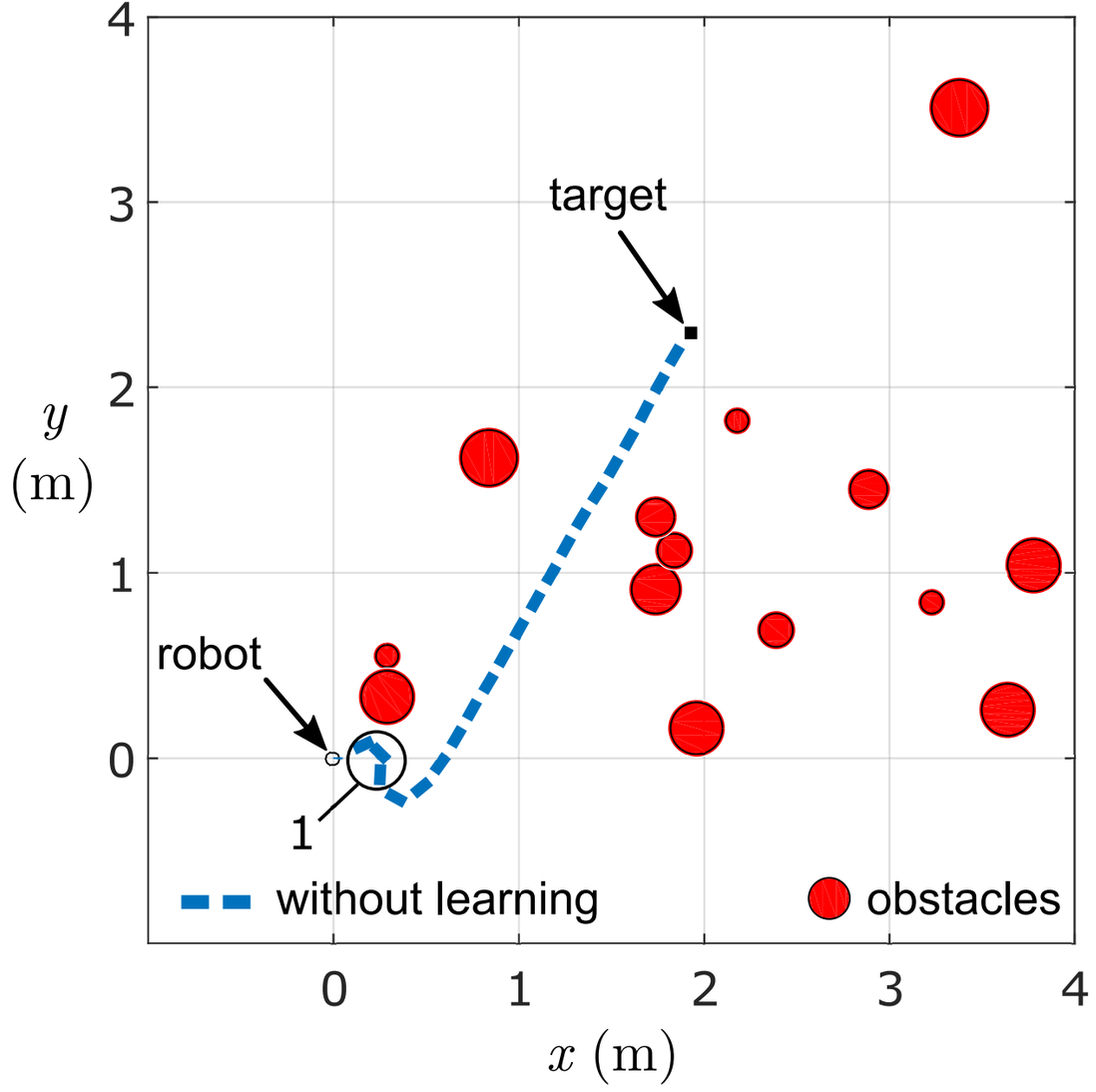
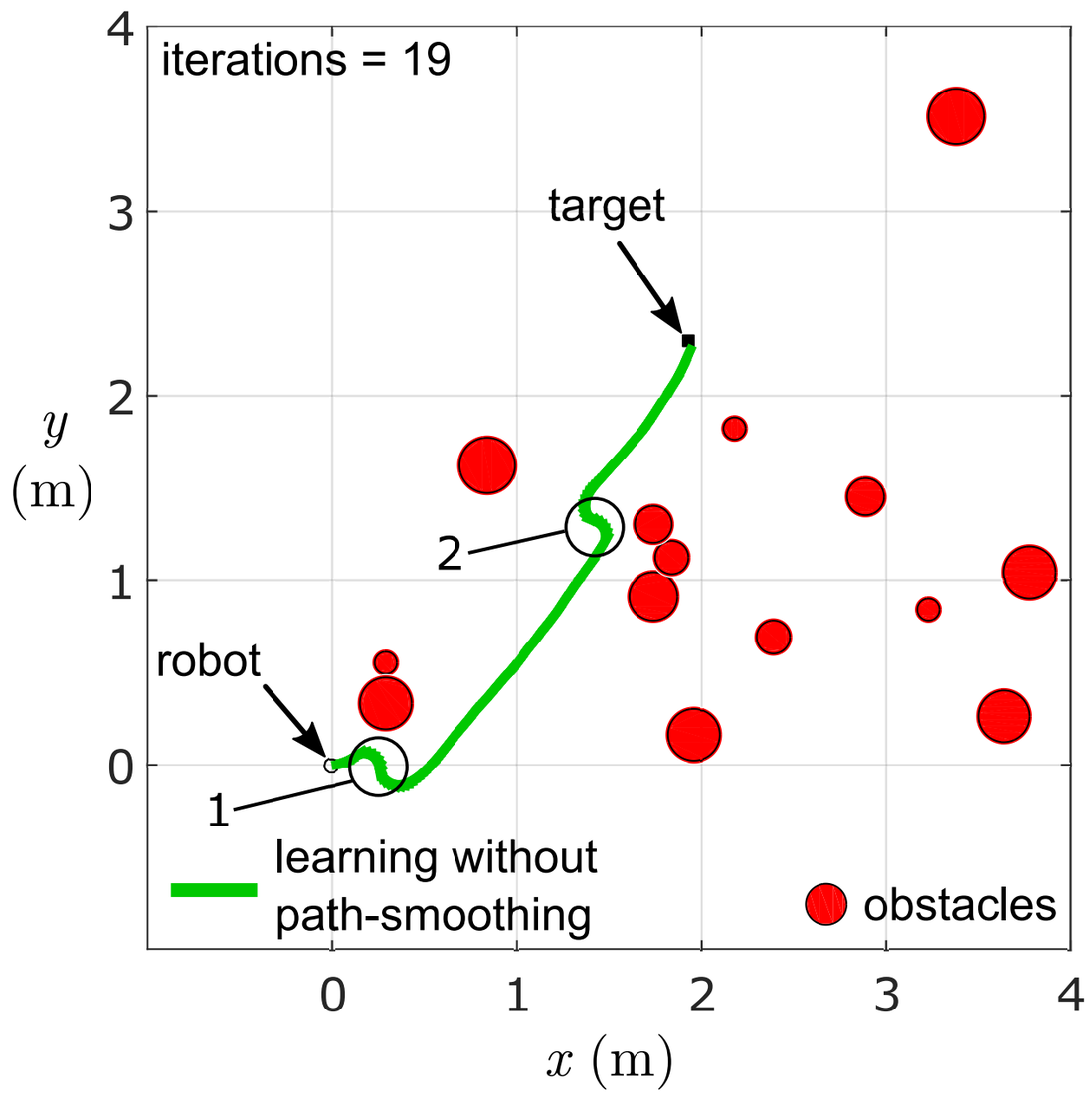
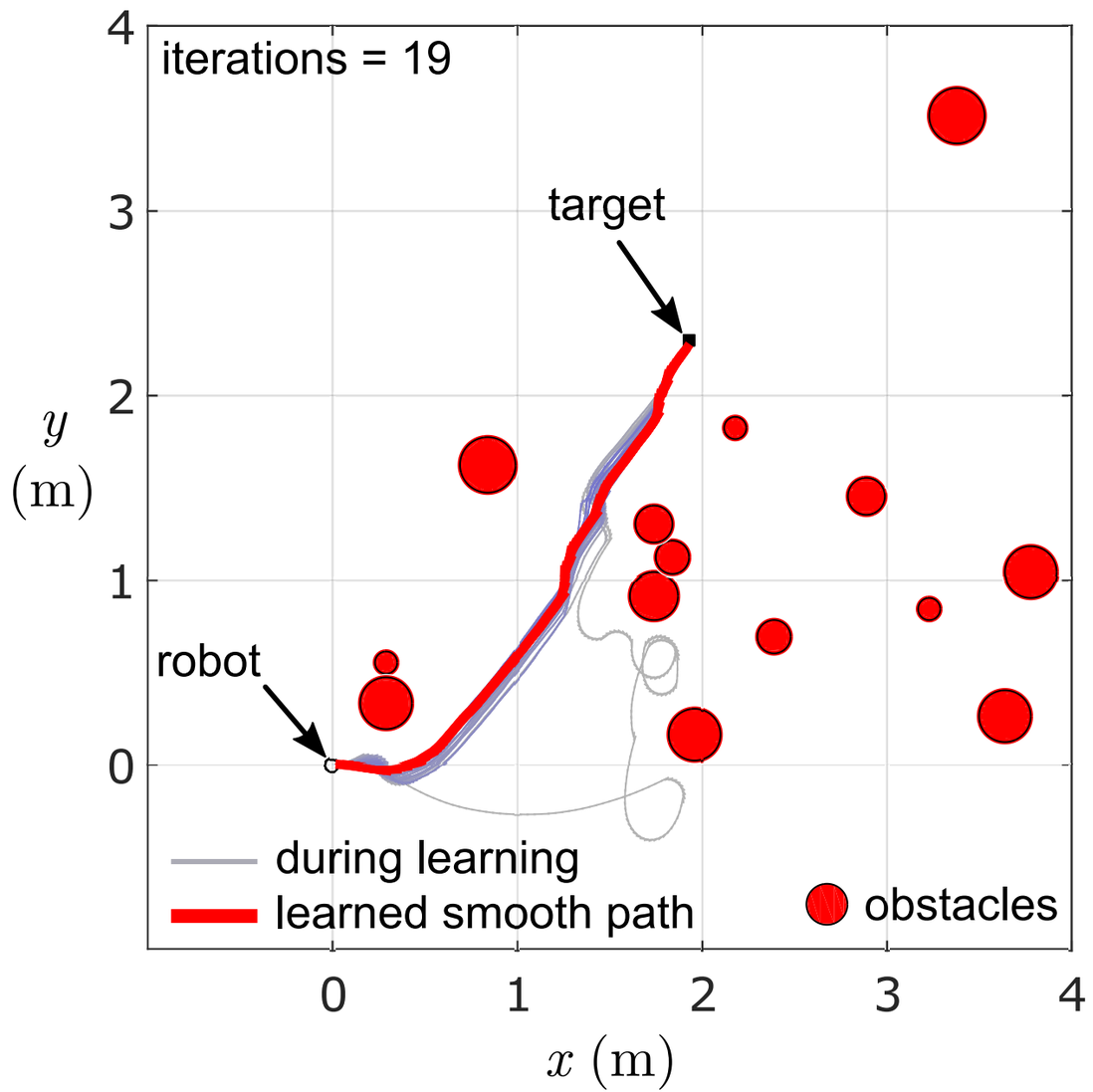
a


target
robot
1
without learning
obstacles
y (m)
x (m)

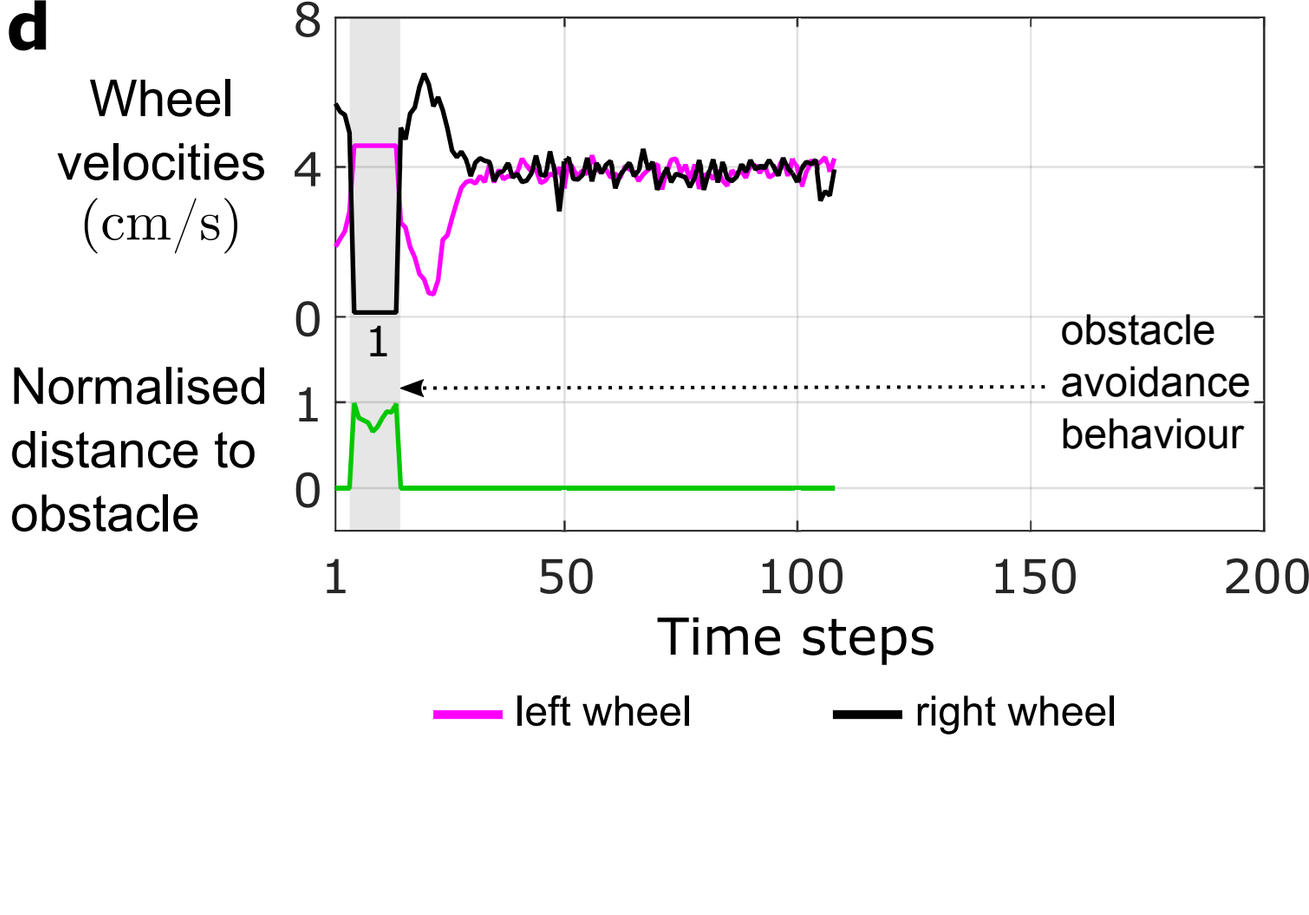
b


iterations = 19
target
2
robot
1
learning without path-smoothing
obstacles
y (m)
x (m)

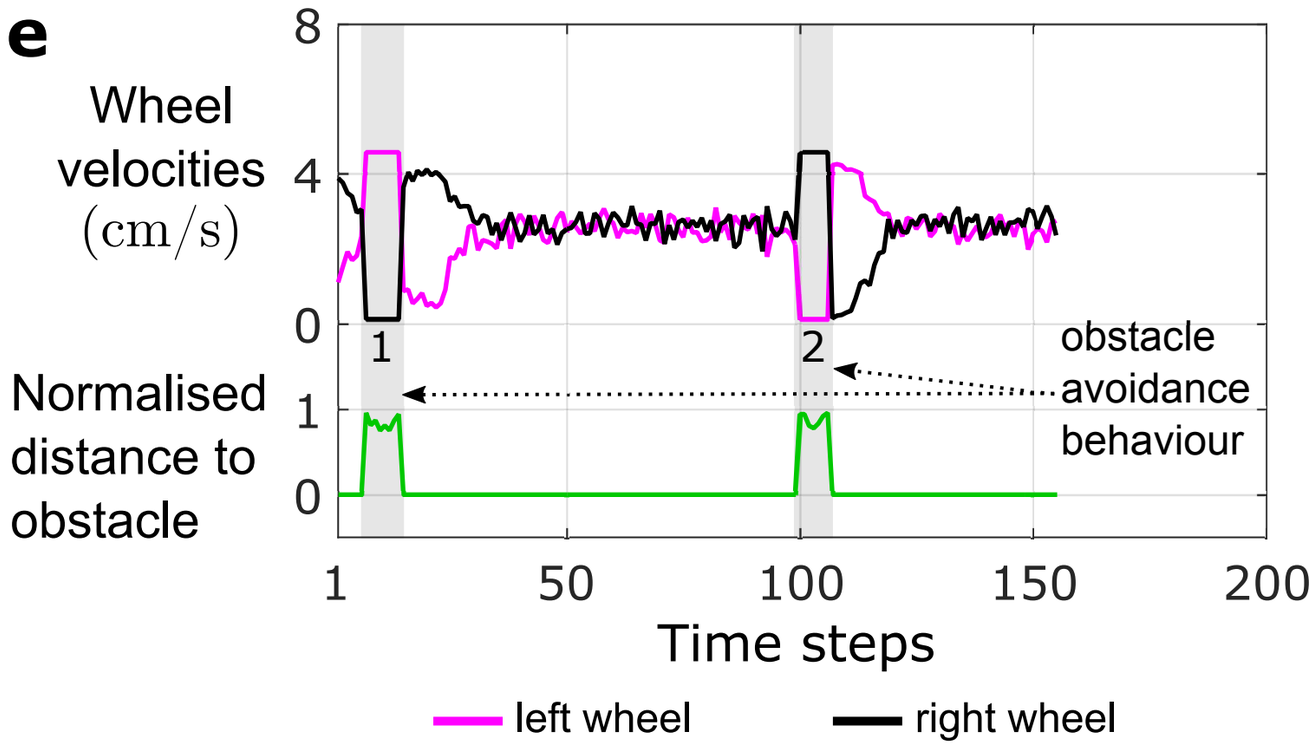
c


iterations = 19
target
robot
during learning
learned smooth path
obstacles
y (m)
x (m)

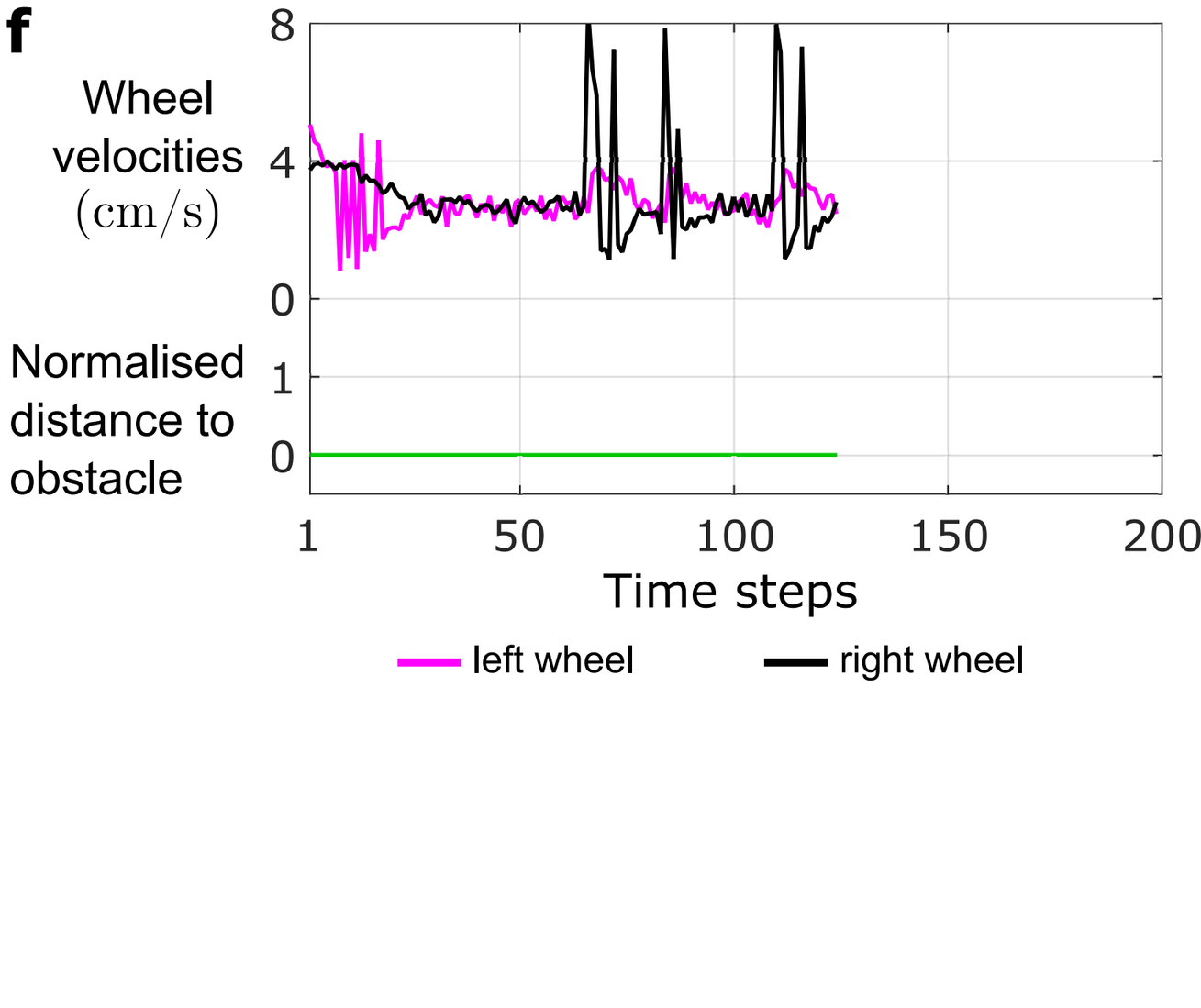
d


Wheel velocities (cm/s)
Normalised distance to obstacle
1
obstacle avoidance behaviour
Time steps
left wheel
right wheel

e


Wheel velocities (cm/s)
Normalised distance to obstacle
1
2
obstacle avoidance behaviour
Time steps
left wheel
right wheel

f


Wheel velocities (cm/s)
Normalised distance to obstacle
Time steps
left wheel
right wheel