



مهمة استخدام روبوت السلحفاة لإنشاء وحفظ خريطة مسار الذكاء الاصطناعي

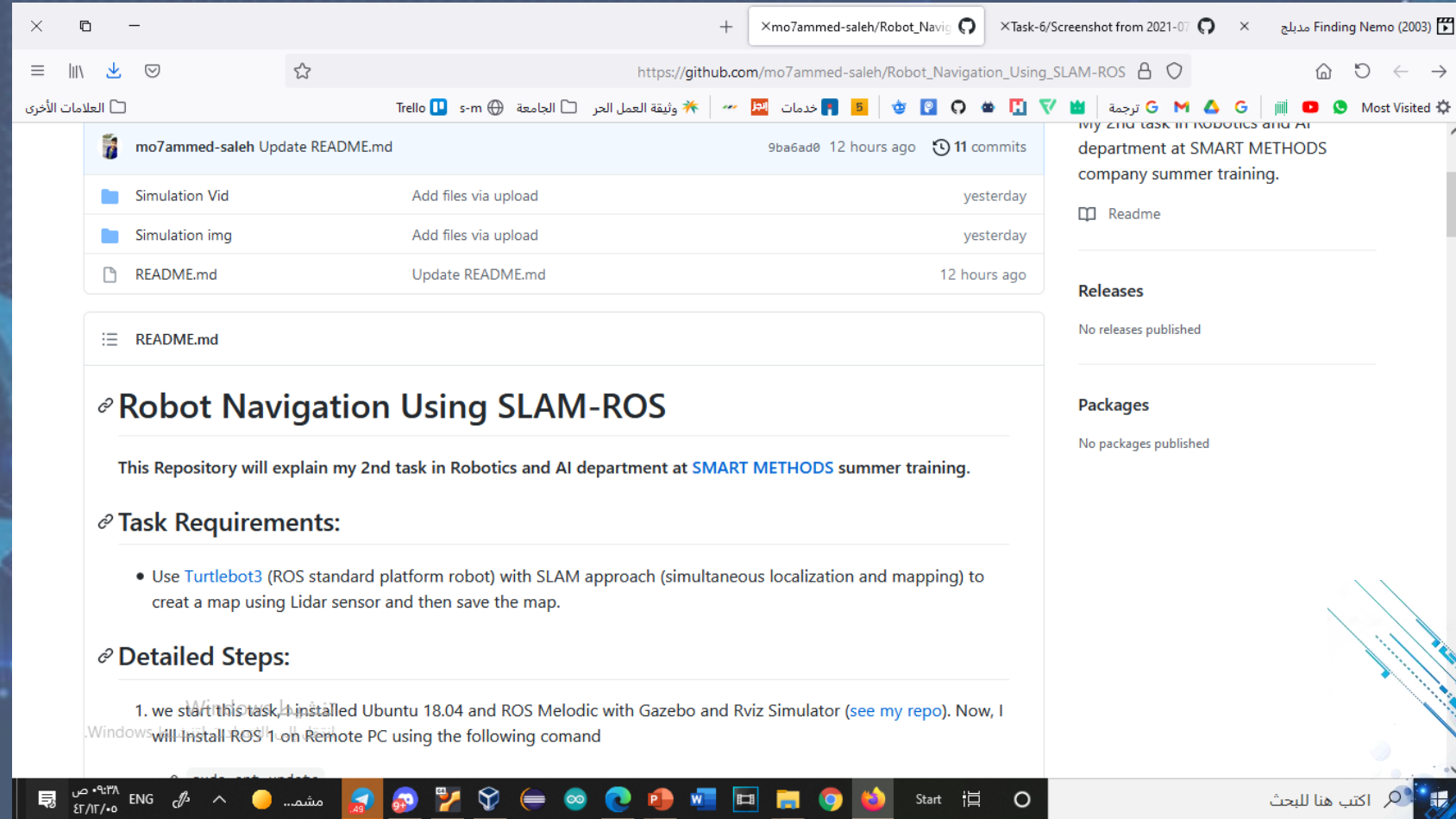
بدأت بتحميل الأكواد

1

ملاحظة:

استخدمت الأكواد الموجودة في موقع أخي محمد صالح ولقد انتفعت منها كثيرا ، فلا تنسوني وإياه من الدعاء

للحصول على الأكواد اضغط هنا



mo7ammed-saleh Update README.md 9ba6ad0 12 hours ago 11 commits

File	Commit	Time
Simulation Vid	Add files via upload	yesterday
Simulation img	Add files via upload	yesterday
README.md	Update README.md	12 hours ago

Robot Navigation Using SLAM-ROS

This Repository will explain my 2nd task in Robotics and AI department at [SMART METHODS](#) summer training.

Task Requirements:

- Use [Turtlebot3](#) (ROS standard platform robot) with SLAM approach (simultaneous localization and mapping) to create a map using Lidar sensor and then save the map.

Detailed Steps:

- we start this task, I installed Ubuntu 18.04 and ROS Melodic with Gazebo and Rviz Simulator ([see my repo](#)). Now, I will install ROS 1 on Remote PC using the following comand

my 2nd task in Robotics and AI department at SMART METHODS company summer training.

Readme

Releases

No releases published

Packages

No packages published

Windows 10

ENG

مشغول

Start

اكتب هنا للبحث

ملاحظة:
ولكن للأسف
واجهتني في أكواد
أخي محمد مشاكل
خصوصا في
الخطوة الثانية

https://github.com/mo7ammed-saleh/Robot_Navigation_Using_SLAM-ROS

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ترجمة G M G G Most Visited

README.md

1. we start this task, I installed Ubuntu 18.04 and ROS Melodic with Gazebo and Rviz Simulator ([see my repo](#)). Now, I will Install ROS 1 on Remote PC using the following comand

- `sudo apt update`
- `sudo apt upgrade`
- `wget https://raw.githubusercontent.com/ROBOTIS-GIT/robotis_tools/master/install_ros_melodic.sh`
- `chmod 755 ./install_ros_melodic.sh`
- `bash ./install ros melodic.sh`

2. Install Dependent ROS 1 Packages

- `sudo apt-get install ros-melodic-joy ros-melodic-teleop-twist-joy \ ros-melodic-teleop-twist-keyboard ros-melodic-laser-proc \ ros-melodic-rgbd-launch ros-melodic-depthimage-to-laserscan \ ros-melodic-rosserial-arduino ros-melodic-rosserial-python \ ros-melodic-rosserial-server ros-melodic-rosserial-client \ ros-melodic-rosserial-msgs ros-melodic-amcl ros-melodic-map-server \ ros-melodic-move-base ros-melodic-urdf ros-melodic-xacro \ ros-melodic-compressed-image-transport ros-melodic-rqt* \ ros-melodic-gmapping ros-melodic-navigation ros-melodic-interactive-markers`

3. Install TurtleBot3 Packages

- `sudo apt-get install ros-melodic-dynamixel-sdk`
- `sudo apt-get install ros-melodic-turtlebot3-msgs`
- `sudo apt-get install ros-melodic-turtlebot3`

Windows ENG مشم...

اكتب هنا للبحث

اكتشاف المشاكل

2

ملاحظة:
فوجدت حلها في
موقع اخر

لرابط الموقع اضغط
هنا

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ROBOTIS e-Manual

DYNAMIXEL DYNAMIXEL SYSTEM EDUCATIONAL KITS SOFTWARE PARTS FAQ

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Kinetic Melodic Noetic Dashing Foxy Windows

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TurtleBot3

1. Overview
2. Features
3. Quick Start Guide
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 - 3. 2. SBC Setup
 - 3. 3. OpenCR Setup
 - 3. 4. Hardware Assembly
 - 3. 5. Bringup
 - 3. 6. Basic Operation
4. SLAM
5. Navigation
6. Simulation
7. Manipulation

1. Quick Start Guide

...rtleBot3 ROS1 Noetic Quick Start Guide for Noetic

TURTLEBOT3

المشاهدة على YouTube

1. 1. PC Setup

WARNING: The contents in this chapter corresponds to the Remote PC (your desktop or laptop PC) which will control TurtleBot3. Do not apply this

اكتشاف المشاكل

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ملاحظة:

ولأن نسختي كانت
يوبنتو ١٨ ، كان
لا بد ان اختار الـ روز
میلودیک فی القائمة

لرابط الموقع اضغط
هنا

ROBOTIS e-Manual

DYNAMIXEL DYNAMIXEL SYSTEM EDUCATIONAL KITS SOFTWARE PARTS FAQ

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Kinetic Melodic ROS

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TOP

1. Quick Start Guide

TURTLEBOT3

...rtleBot3 ROS1 Noetic Quick Start Guide for Noetic

المشاهدة على YouTube

1. 1. PC Setup

WARNING: The contents in this chapter corresponds to the Remote PC (your desktop or laptop PC) which will control TurtleBot3. Do not apply this

ملاحظة:

وكانت الخطوة الثانية موجودة فلما كتبتها حلت المشكلة

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TurtleBot3	
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5. Navigation	
6. Simulation	
7. Manipulation	تنشيط Windows
8. Autonomous Driving	انتقل إلى الإعدادات لتنشيط Windows

1. 1. 2. Install ROS 1 on Remote PC

Open the terminal with **Ctrl+Alt+T** and enter below commands one at a time.
In order to check the details of the easy installation script, please refer to [the script file](#).

```
$ sudo apt update
$ sudo apt upgrade
$ wget https://raw.githubusercontent.com/ROBOTIS-GIT/robotis_tools/master/install_ros_melodic.sh
$ chmod 755 ./install_ros_melodic.sh
$ bash ./install_ros_melodic.sh
```

If the above installation fails, please refer to [the official ROS1 Melodic installation guide](#).

1. 1. 3. Install Dependent ROS 1 Packages

```
$ sudo apt-get install ros-melodic-joy ros-melodic-teleop-twist-joy \
ros-melodic-teleop-twist-keyboard ros-melodic-laser-proc \
ros-melodic-rgbd-launch ros-melodic-depthimage-to-laserscan \
ros-melodic-rosserial-arduino ros-melodic-rosserial-python \
ros-melodic-rosserial-server ros-melodic-rosserial-client \
ros-melodic-rosserial-msgs ros-melodic-amcl ros-melodic-map-server \
ros-melodic-move-base ros-melodic-urdf ros-melodic-xacro \
ros-melodic-compressed-image-transport ros-melodic-rqt* \
ros-melodic-gmapping ros-melodic-navigation ros-melodic-interactive-markers
```

1. 1. 4. Install TurtleBot3 Packages

Install TurtleBot3 via Debian Packages.

اكتشاف المشاكل

2

ملاحظة:

حينما تصل الى هذه
الخطوة تأكد ان
تضغط على المربع
فان بداخله اكواد
إضافية مخفية

لرابط الموقع اضغط
هنا

✦ Click here to expand more details about building TurtleBot3 package from source.

1. 1. 5. Set TurtleBot3 Model Name

Set the default `TURTLEBOT3_MODEL` name to your model. Enter the below command to a terminal.

- In case of TurtleBot3 Burger

```
$ echo "export TURTLEBOT3_MODEL=burger" >> ~/.bashrc
```

- In case of TurtleBot3 Waffle Pi

```
$ echo "export TURTLEBOT3_MODEL=waffle_pi" >> ~/.bashrc
```



✦ Click here to expand more details about building TurtleBot3 package from source.

In case you need to download the source codes and build them, please use the commands below.
Make sure to remove the identical packages to avoid redundancy.

```
$ sudo apt-get remove ros-melodic-dynamixel-sdk  
$ sudo apt-get remove ros-melodic-turtlebot3-msgs  
$ sudo apt-get remove ros-melodic-turtlebot3  
$ mkdir -p ~/catkin_ws/src  
$ cd ~/catkin_ws/src/  
$ git clone -b melodic-devel https://github.com/ROBOTIS-GIT/DynamixelSDK.git  
$ git clone -b melodic-devel https://github.com/ROBOTIS-GIT/turtlebot3_msgs.git  
$ git clone -b melodic-devel https://github.com/ROBOTIS-GIT/turtlebot3.git  
$ cd ~/catkin_ws && catkin_make  
$ echo "source ~/catkin_ws/devel/setup.bash" >> ~/.bashrc
```

اكتشاف المشاكل

2

ملاحظة:

ثم عند الانتهاء من
كتابة هذا الكود
عدت الى اكواد
محمد صالح لأكمل

لرابط الموقع اضغط
هنا

✦ Click here to expand more details about building TurtleBot3 package from source.

In case you need to download the source codes and build them, please use the commands below.
Make sure to remove the identical packages to avoid redundancy.

```
$ sudo apt-get remove ros-melodic-dynamixel-sdk
$ sudo apt-get remove ros-melodic-turtlebot3-msgs
$ sudo apt-get remove ros-melodic-turtlebot3
$ mkdir -p ~/catkin_ws/src
$ cd ~/catkin_ws/src/
$ git clone -b melodic-devel https://github.com/ROBOTIS-GIT/DynamixelSDK.git
$ git clone -b melodic-devel https://github.com/ROBOTIS-GIT/turtlebot3_msgs.git
$ git clone -b melodic-devel https://github.com/ROBOTIS-GIT/turtlebot3.git
$ cd ~/catkin_ws && catkin_make
$ echo "source ~/catkin_ws/devel/setup.bash" >> ~/.bashrc
```


اكتشاف المشاكل

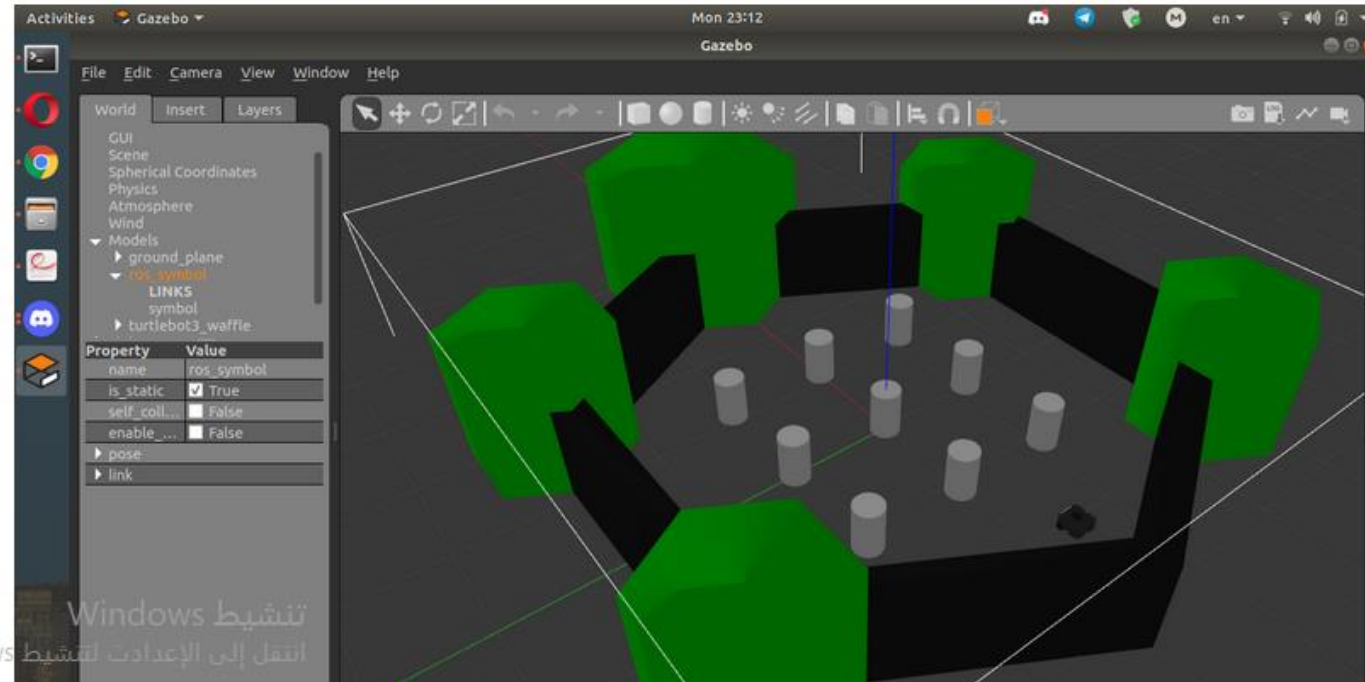
2

ملاحظة:
فبدأت من هنا
لتثبيت روبات
السلحفاة والبيئة
الخاصة به

لرابط الموقع اضغط
هنا

• TurtleBot3 World with a robot called "waffle"

- ◊ `export TURTLEBOT3_MODEL=waffle`
- ◊ `roslaunch turtlebot3_gazebo turtlebot3_world.launch`
- ◊



تنشيط Windows
انتقل إلى الإعدادات لتنشيط Windows

ملاحظة:

تأكد انك تقرأ
الخطوات وتكتبها
بالتفصيل كما يشرح
لك ، لا تنسخ
وتلصق فقط وكأن
كل شيء سيصبح
تمام

لرابط الموقع اضغط
هنا

README.md

6. We will choose one of the previous robot which is waffle and we will control it using the keyboard keys W: Forward, A: Left, S: Stop, D: Right, X: Backward. So, Run the previous command for waffle robot then open new terminal and run the following command:

◊ `roslaunch turtlebot3_teleop turtlebot3_teleop_key.launch`

7. Now, close everything and let's use SLAM simulation to create a map for our world, and then save the map with help of lidar sensor. There are 3 Gazebo environments prepared as mentioned in step 5, but for creating a map with SLAM, it is recommended to use either TurtleBot3 World or TurtleBot3 House. So, I will use TurtleBot3 World with a robot called "waffle" to create the map and save it.

◊ Launch the Gazebo environment with waffle robot `export TURTLEBOT3_MODEL=waffle` then `roslaunch turtlebot3_gazebo turtlebot3_world.launch`

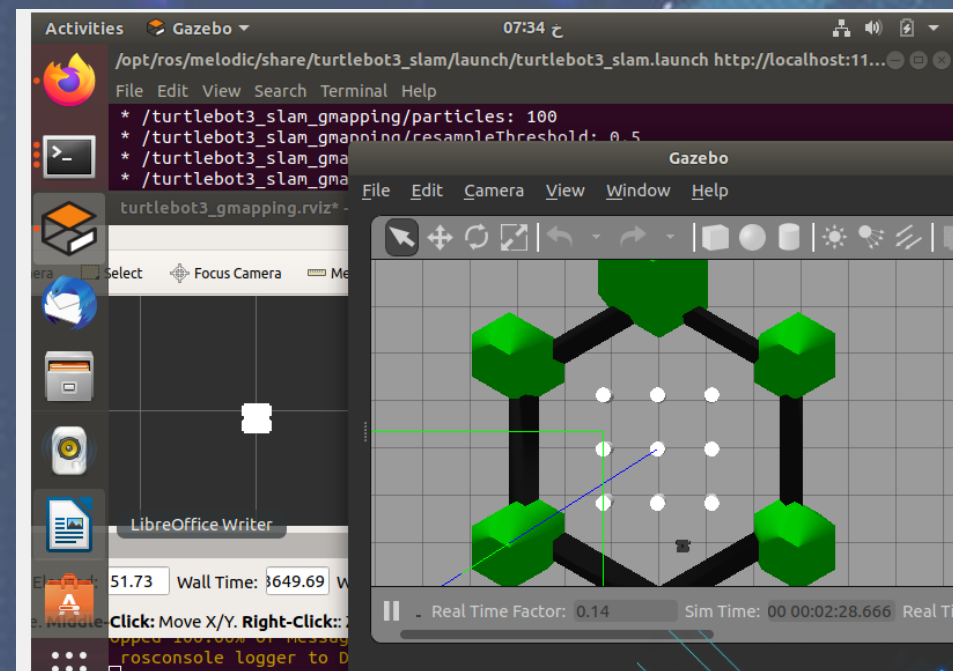
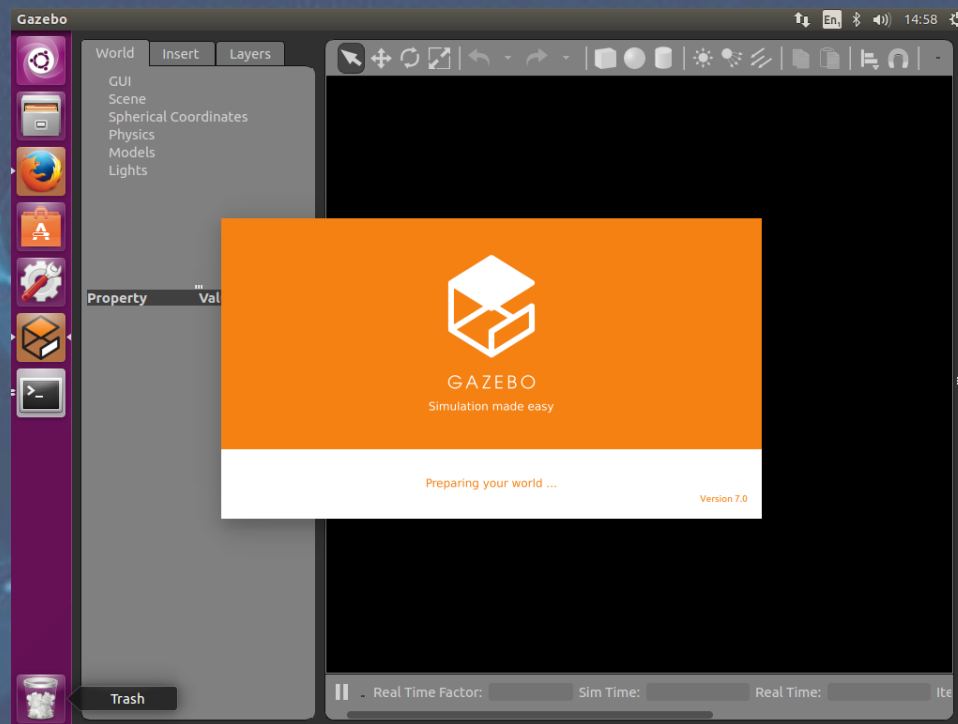
◊ Open new terminal to Run SLAM Node `export TURTLEBOT3_MODEL=waffle` then `roslaunch turtlebot3_slam turtlebot3_slam.launch slam_methods:=gmapping`

◊ Open a new terminal to control the waffle robot and scan the area using lidar sensor `export TURTLEBOT3_MODEL=waffle` then `roslaunch turtlebot3_teleop turtlebot3_teleop_key.launch`. (in the terminal we will control the robot direction using W,A,S,D,X keyboard keys).

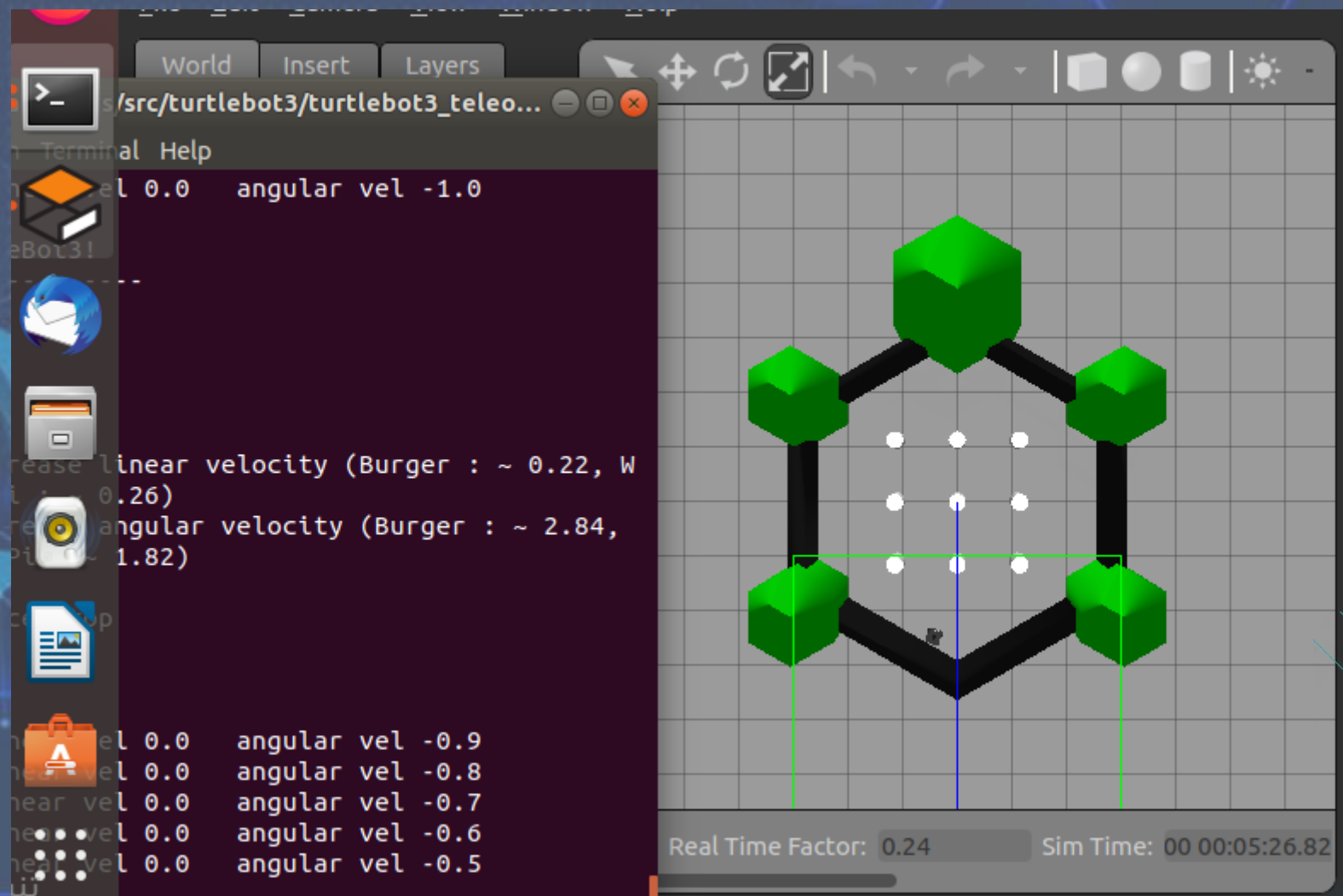
تنشيط Windows

انتقل إلى الإعدادات لتنشيط Windows

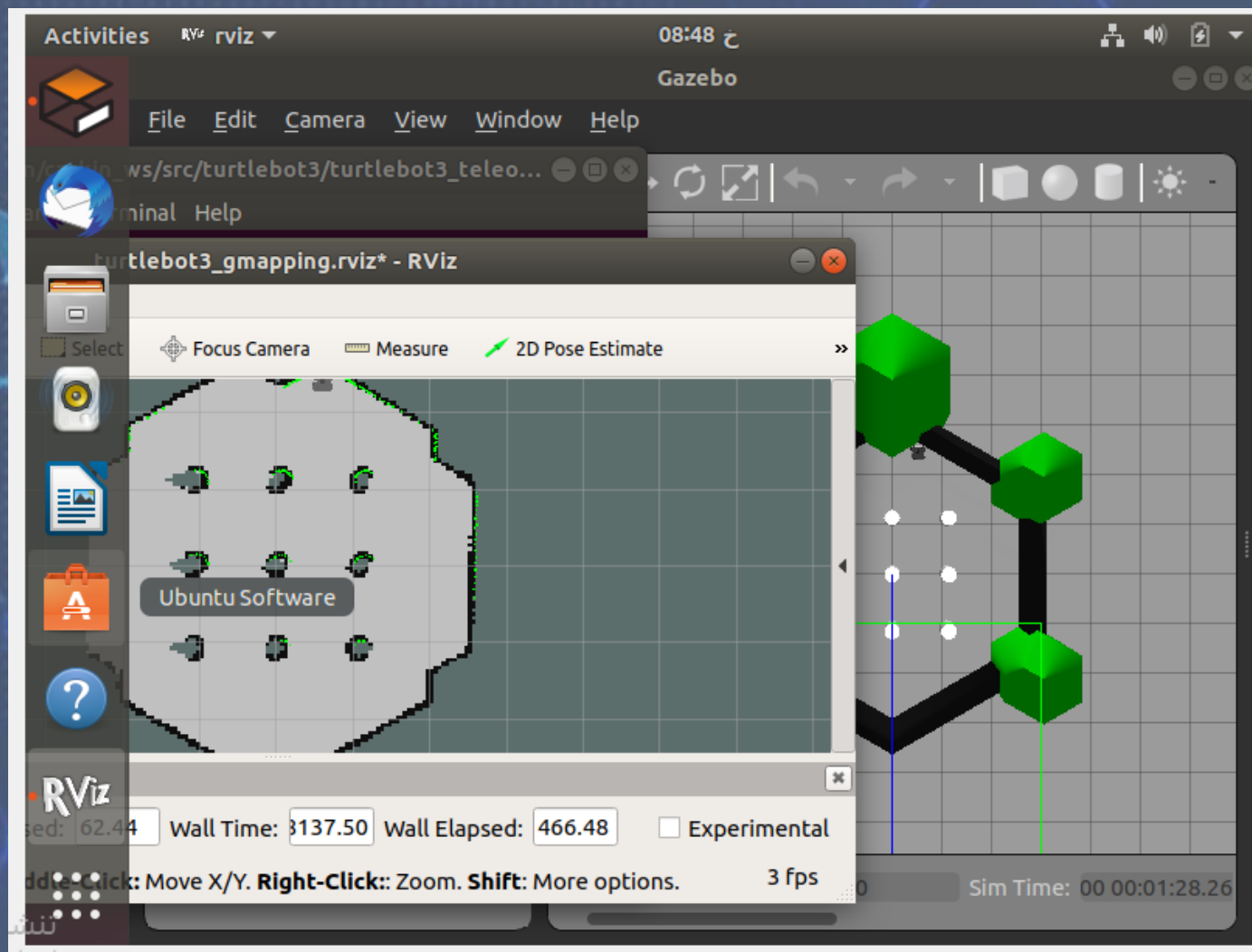
تم تثبيت القازيبو
مع روبوت
السلحفاة مع البيئة
الخاصة بها



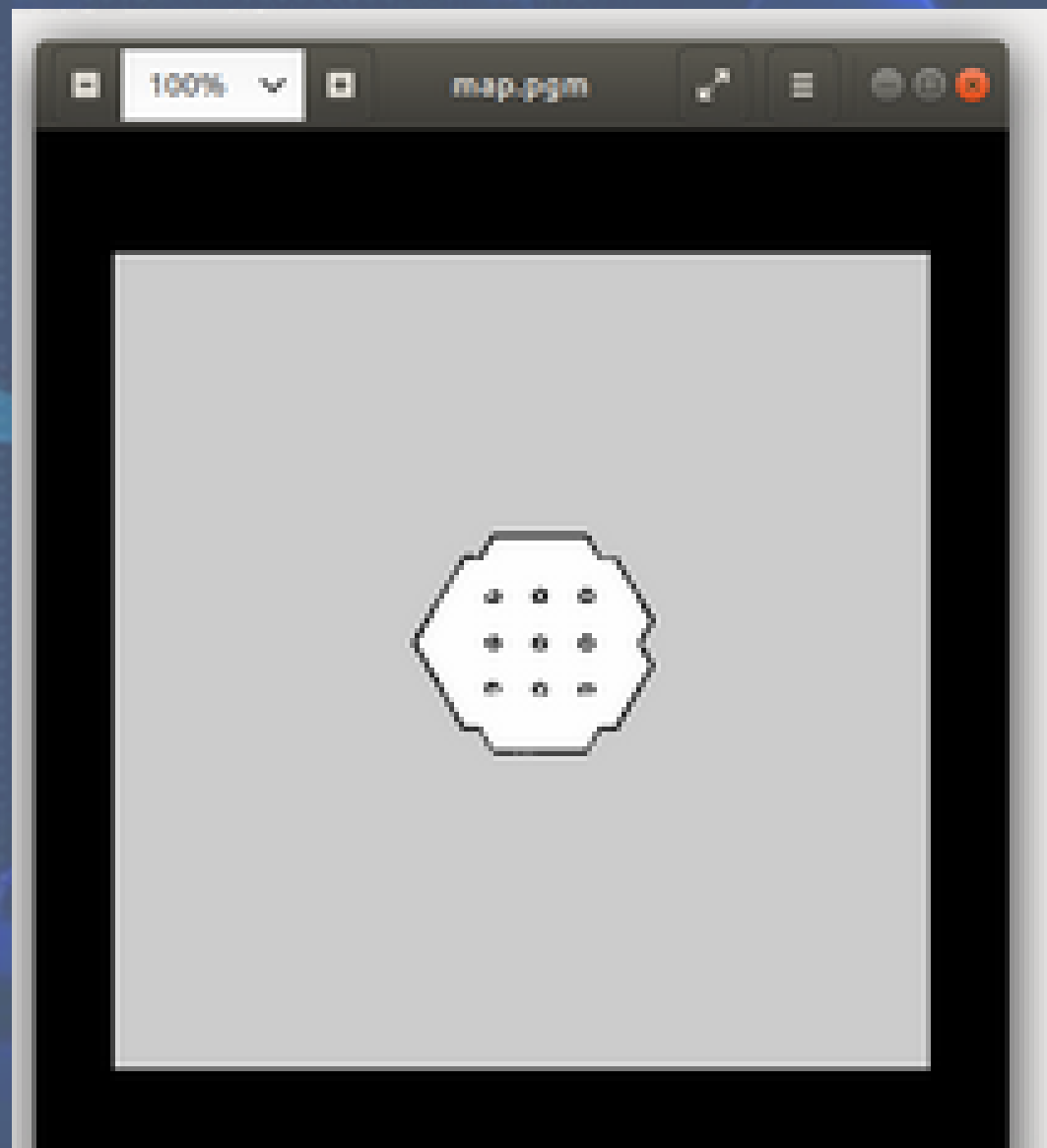
تم التحكم في
روبوت السلحفاة
وجعله يسجل
خريطة البيئة
الخاصة به



تم رسم الخريطة
عبر التحكم
بالروبوت



صورة تقريبية
للخريطة



عمل : عبدالرحمن الشامي (Gentle)

