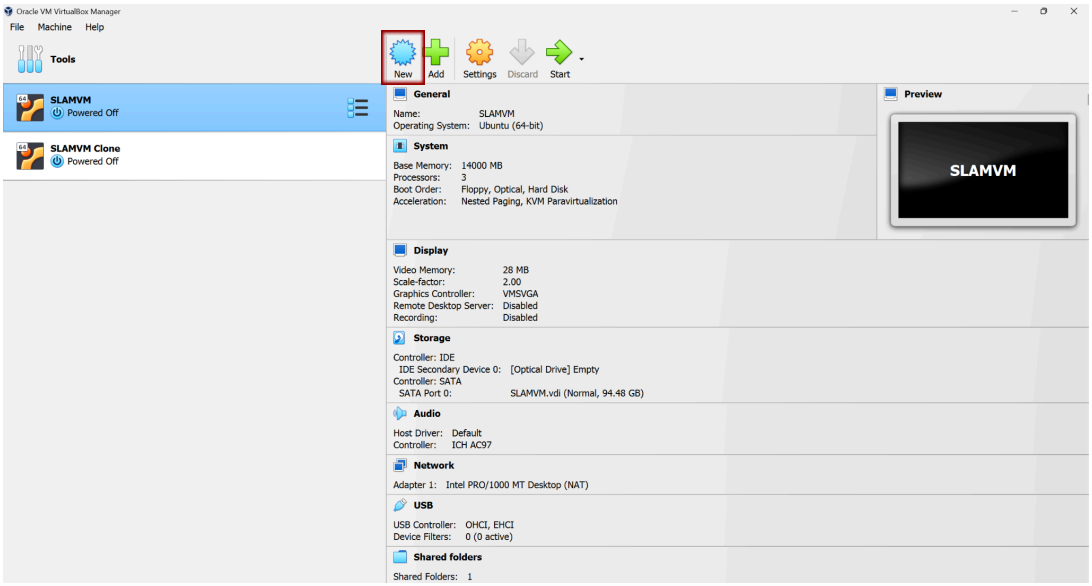
This document will guide you on setting up ROS Noetic and Gazebo11 in order to simulate image stitching on a drone. This includes creating a virtual machine with Ubuntu 20.04, installing ROS Noetic, setting up the ROS environment, installing ArduPilot, installing Gazebo11, installing QGroundControl, and installing necessary ROS packages for the image stitching.

Last updated: July 31st, 2024.

1. Creating a virtual machine with Ubuntu 20.04 (If already using a Linux computer, you may skip this step. Just make sure that the Ubuntu version running matches the ROS distribution that will be used. Ubuntu 20.04 is recommended).
    1.1. Installing VirtualBox
        1.1.1. Go to the following link: https://www.virtualbox.org/
        1.1.2. Download VirtualBox for your computer's OS
        1.1.3. Open the executable file and complete the installation wizard
        1.1.4. Open the software once done
    1.2. Download the Ubuntu 20.04 LTS Desktop
        1.2.1. Go to the following link: https://ubuntu.com/download/desktop
        1.2.2. Download the file for Ubuntu 20.04 LTS Desktop
    1.3. Setting up the virtual machine configuration
        1.3.1. With VM open, click on *New*



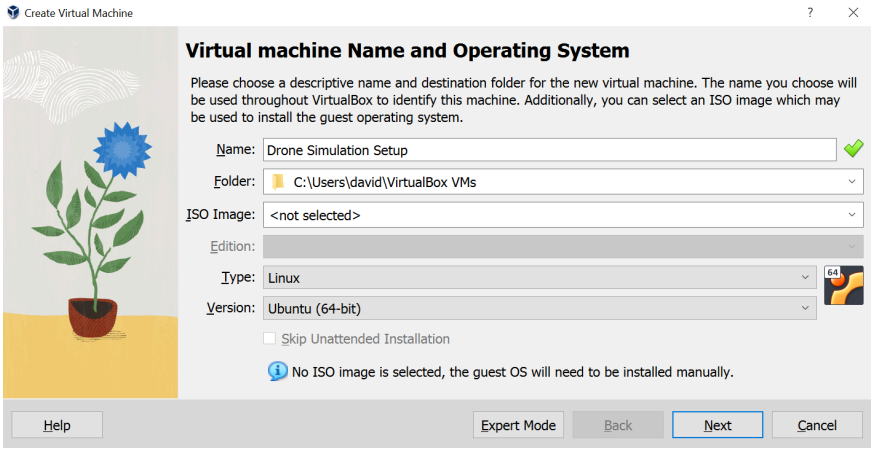
        1.3.2. Enter the name of the computer (it can be whatever you want).

Select the Folder (it can be the default Folder that appears).

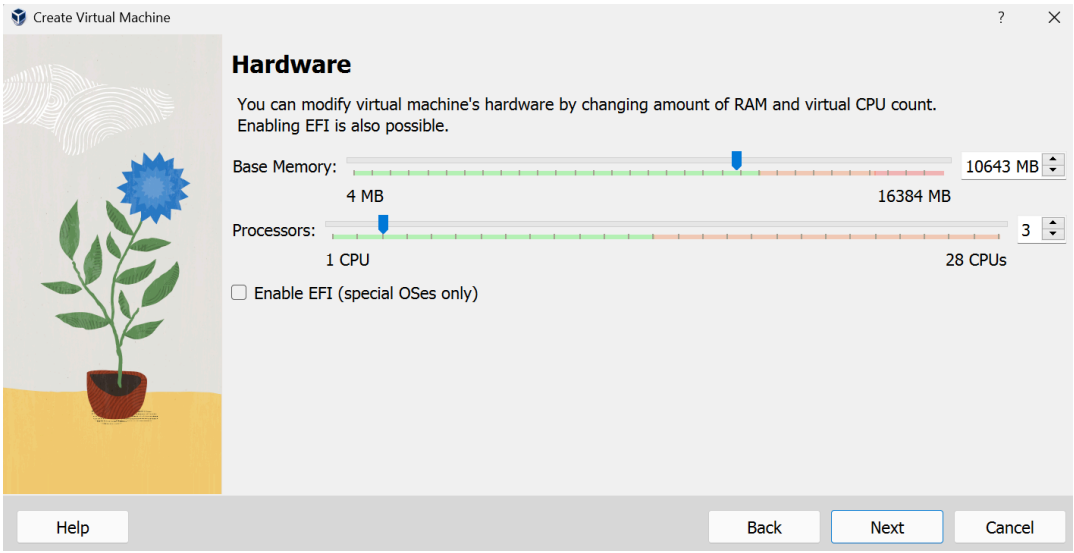
Leave ISO Image as *<not selected>* for now.

On Type select *Linux*

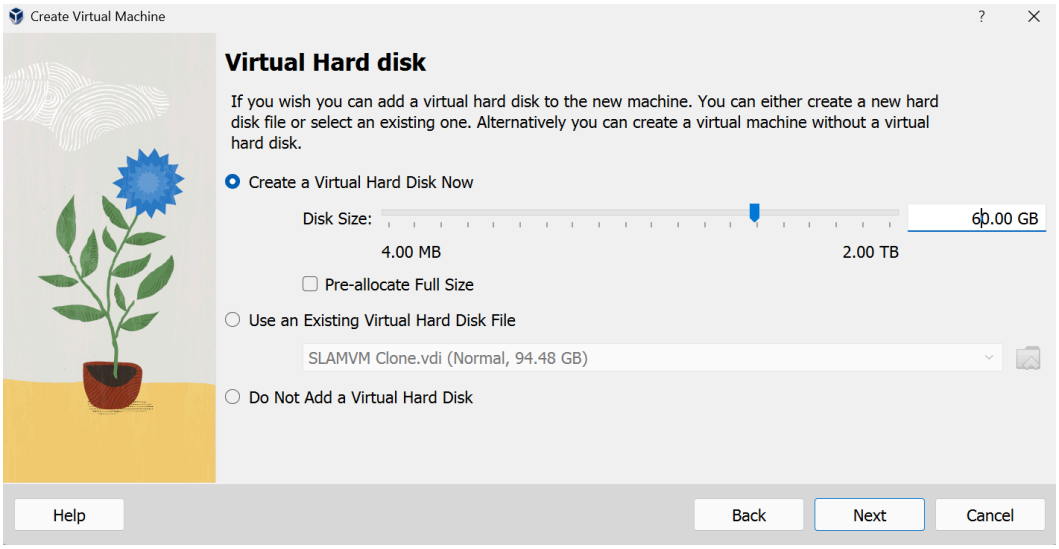
On version select *Ubuntu (64-bit)*



1.3.3. Give the VM as much RAM and Processors as you can. This will help the software running be faster and easier to use. In this case I will assign about 10 GB of RAM and 3 CPUs.

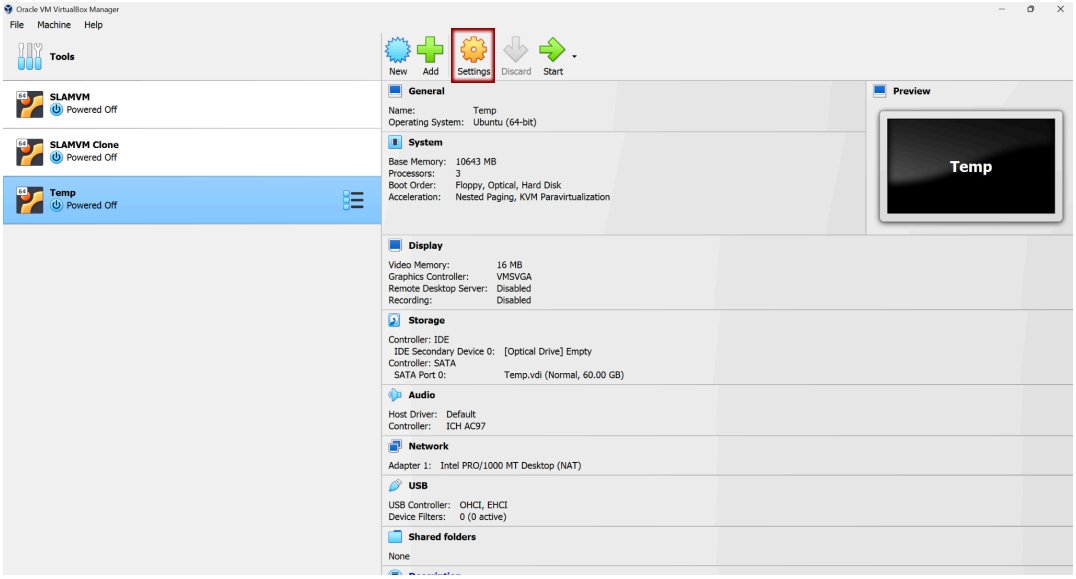


1.3.4. Assign the Memory the VM will have. 60 GB is sufficient

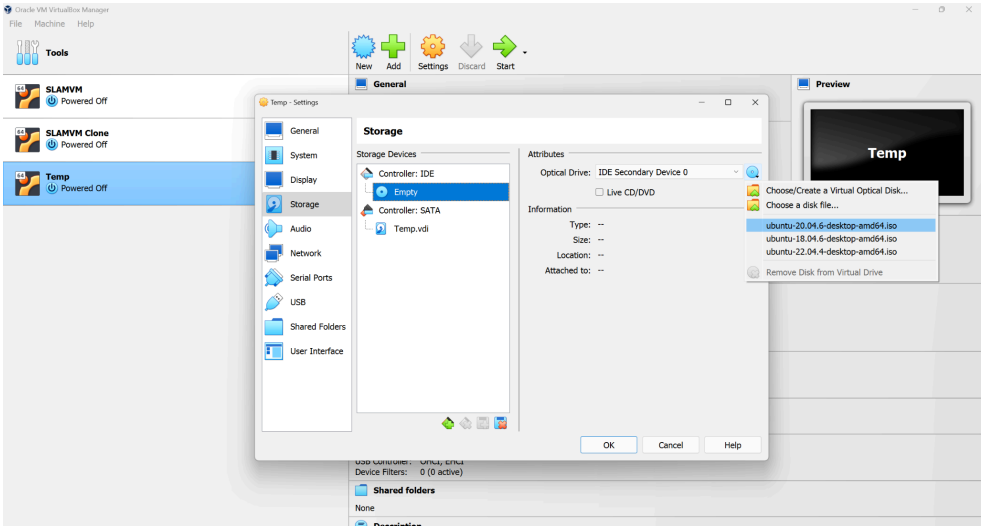


1.3.5. Select Finish

1.3.6. Choose the newly created VM and click on *settings*



1.3.7. Go to *Storage,* then click on *Empty,* then on the blue disk that appears to the right, and select the Ubuntu 20.04 Image downloaded in step 1.2. If it is not recognized in the scroll down section that appears, go the the folder where it is downloaded and select it



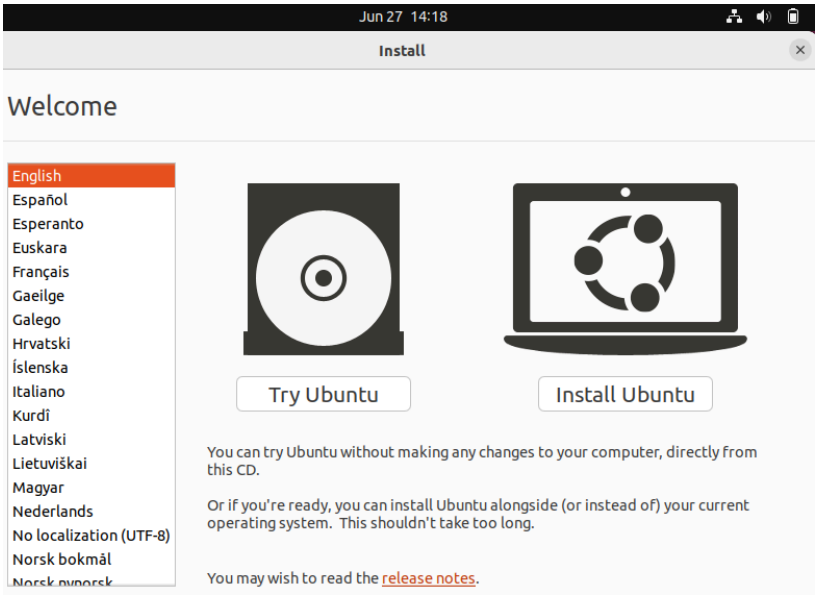
1.3.8. Click *OK* and then *Start.* Anytime you want to change the configuration of the VM you can go to *Settings* and update it (Change RAM, Processors, etc.)

2. Ubuntu Setup

2.1. Ubuntu Installation

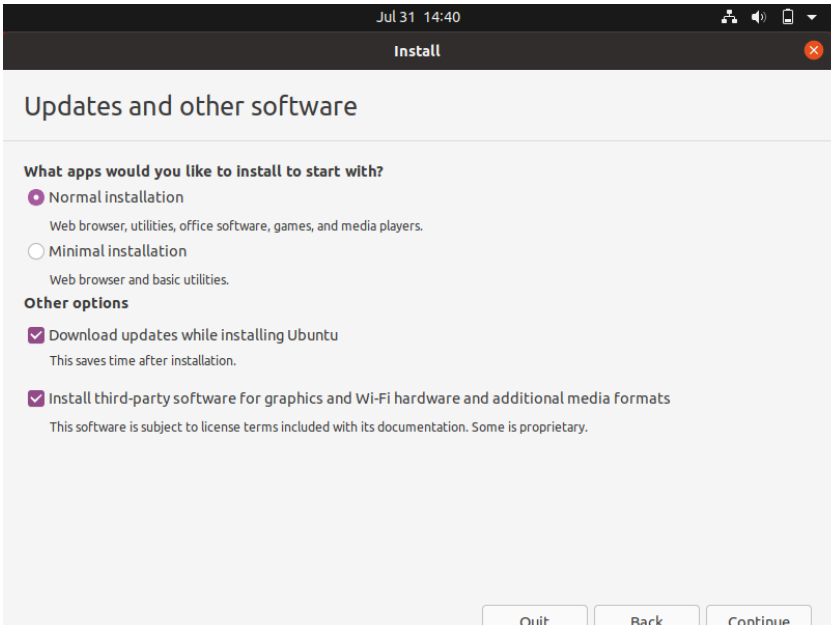
2.1.1. Select *Try or Install Ubuntu*

2.1.2. Select *Install Ubuntu*



2.1.3. Choose your Keyboard Layout and Continue

2.1.4. Proceed with *Normal Installation, Download updates while installing Ubuntu,* and *Install third-party software*



2.1.5. Select *Erase disk and install Ubuntu* (this is only for the VM, your computer's Disk will remain untouched). Select continue on the pop up that appears

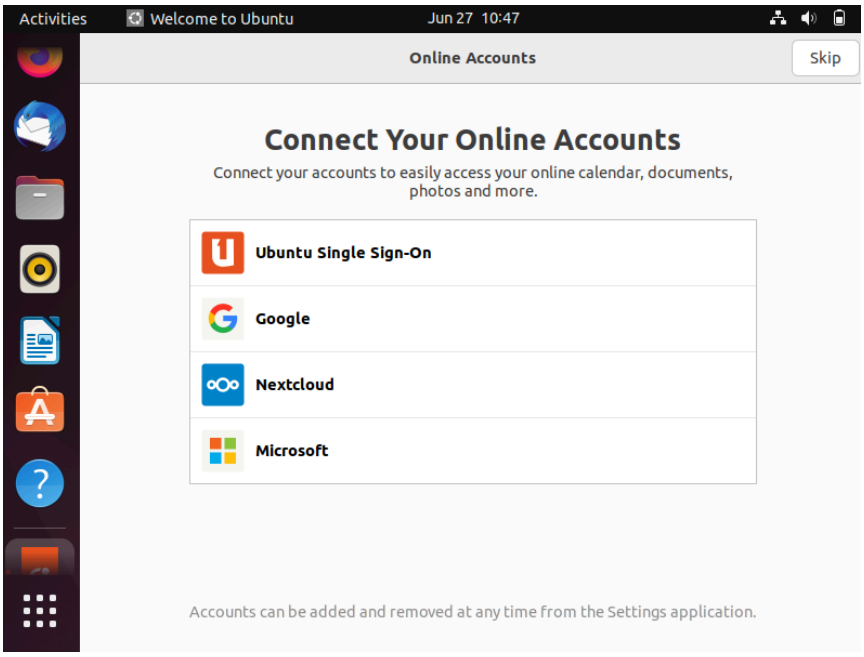
2.1.6. Choose your time zone and continue

2.1.7. Create the computer's username and password and continue

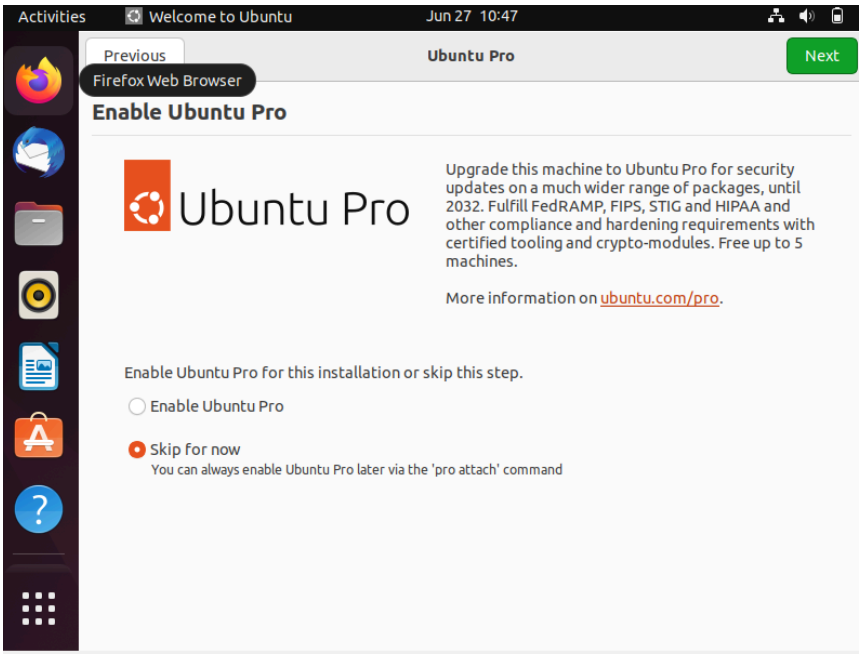
2.1.8. Wait while everything is installed

2.1.9. Once the installation is complete, select *Restart Now* on the pop up that appears. Press *Enter* when asked

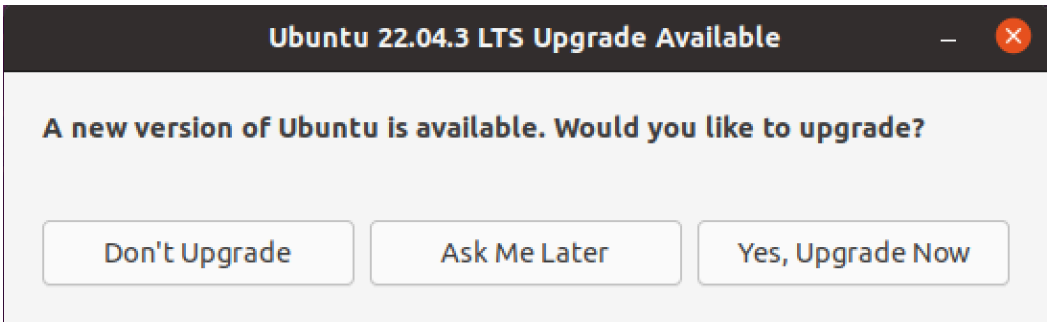
2.1.10. You may connect your online accounts or just press *Skip*



2.1.11. Select *Skip for now* and click *Next*



2.1.12. If a software updater appears, select *Remind me Later*



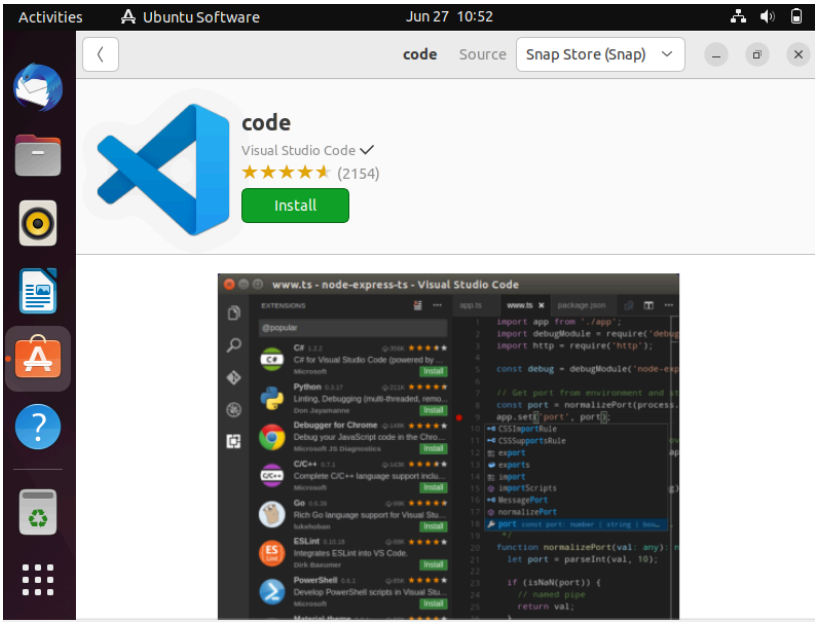
2.1.13. You can choose to send system info or not, then click *Next*

2.1.14. Choose whether or not to use Location Services and then click *Next*

3. Tools and software needed

3.1. VisualStudio Code

3.1.1. From *Ubuntu Software* select to install Visual Studio Code


Activities
Ubuntu Software
Jun 27 10:52
code
Source
Snap Store (Snap)
code
Visual Studio Code
(2154)
Install
www.ts - node-express-ts - Visual Studio Code

3.1.2. Open VSCode (You may add a shortcut of VSCode to the side bar by right clicking the icon and selecting add to favorites)

Install the following extensions