

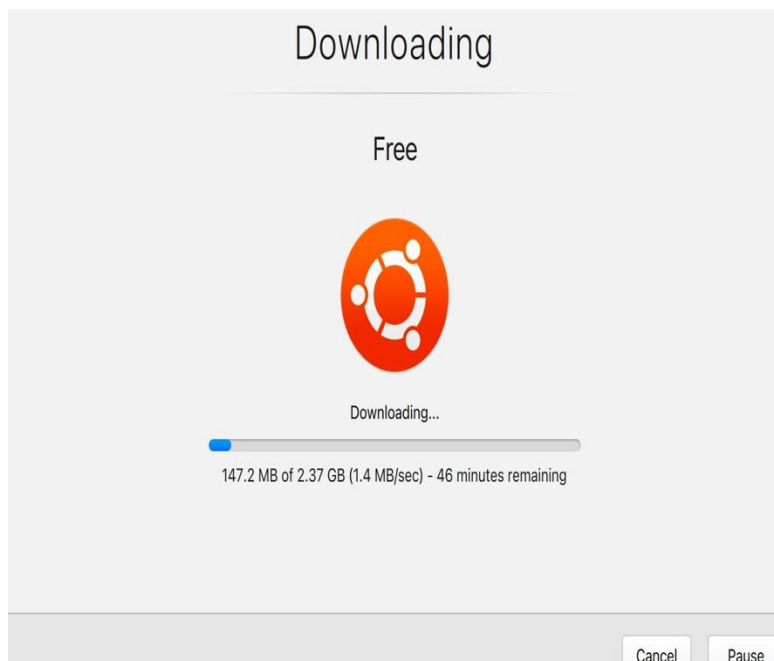
-Task2 Artifical intelligence (AI):

Step by step :

1. install parallel



2. and install ubuntu 20.04.2 ARM64



3. Commands to download ROS
4. install ROS
5. commands to arm package in ROS

1

```
parallels@ubuntu-linux-20-04-desktop: ~/catkin_ws
Setting up libroscpp-serialization0d:arm64 (0.6.13-1build1) ...
Setting up libxmlrpcpp2d:arm64 (1.14.3+ds1-1iubuntu5) ...
Setting up python3-catkin (0.8.0-1ubuntu2) ...
Setting up librtf2-idearm64 (0.6.6-1build3) ...
Setting up libroscpp2d:arm64 (1.13.11-3build4) ...
Setting up libroscpp2d:arm64 (1.14.3+ds1-1iubuntu5) ...
Setting up python3-roscpp-msgs (1.14.3+ds1-1iubuntu5) ...
Setting up python3-roscpp-msgs (1.11.2-10) ...
Setting up python3-geometry-msgs (1.12.7-2) ...
Setting up libroscpp-bridge0d:arm64 (0.5.3-1build1) ...
Setting up libactionlib0d:arm64 (1.12.0-4ubuntu1) ...
Setting up python3-roslib (1.14.7-3build2) ...
Setting up python3-rospy (1.14.3+ds1-1iubuntu5) ...
Setting up python3-sensor-msgs (1.12.7-2) ...
Setting up liburdf0d:arm64 (1.13.1-2build1) ...
Setting up joint-state-publisher (1.12.14-1) ...
Setting up librtf2-ros0d:arm64 (0.6.6-1build3) ...
Setting up librtf2-idearm64 (1.12.0-4ubuntu1) ...
Setting up libroscpp-bridge0d:arm64 (1.13.1-2build1) ...
Setting up joint-state-publisher-gui (1.12.14-1) ...
Setting up librobot-state-publisher-solver0d:arm64 (1.14.0-3build1) ...
Setting up ros-robot-state-publisher (1.14.0-3build1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.7) ...
catkin_make

cd ~/catkin_ws/src
git clone https://github.com/smart-methods/arduino_robot_arm.git
cd ~/catkin_ws

rosdep install --from-paths src --ignore-src -r -y

sudo apt-get install ros-kinetic-moveit
sudo apt-get install ros-kinetic-joint-state-publisher ros-kinetic-joint-state-publisher-gui
sudo apt-get install ros-kinetic-gazebo-ros-control joint-state-publisher
sudo apt-get install ros-kinetic-ros-controllers ros-kinetic-ros-control
sudo nano ~/.bashrc

at the end of the (bashrc) file add the following line
(source /home/wesam/catkin_ws/devel/setup.bash)
then

parallels@ubuntu-linux-20-04-desktop: ~/catkin_ws
Unpacking ros-noetic-ros-control (0.19.5-1focal.20220107.015728) ...
Selecting previously unselected package ros-noetic-velocity-controllers.
Preparing to unpack .../8-ros-noetic-velocity-controllers_0.20.0-1focal.20220519.110319_arm64.deb ...
Unpacking ros-noetic-velocity-controllers (0.20.0-1focal.20220519.110319) ...
Selecting previously unselected package ros-noetic-ros-controllers.
Preparing to unpack .../9-ros-noetic-ros-controllers_0.20.0-1focal.20220519.110704_arm64.deb ...
Unpacking ros-noetic-ros-controllers (0.20.0-1focal.20220519.110704) ...
Setting up ros-noetic-force-torque-sensor-controller (0.20.0-1focal.20220512.125024) ...
Setting up ros-noetic-gripper-action-controller (0.20.0-1focal.20220519.110239) ...
Setting up ros-noetic-velocity-controllers (0.20.0-1focal.20220519.110319) ...
Setting up ros-noetic-combined-robot-hw (0.19.5-1focal.20220106.235948) ...
Setting up ros-noetic-ackermann-steering-controller (0.20.0-1focal.20220519.110018) ...
Setting up ros-noetic-joint-trajectory-controller (0.20.0-1focal.20220519.110250) ...
Setting up ros-noetic-lm-sensor-controller (0.20.0-1focal.20220512.125542) ...
Setting up ros-noetic-effort-controllers (0.20.0-1focal.20220519.110222) ...
Setting up ros-noetic-ros-control (0.19.5-1focal.20220107.015728) ...
Setting up ros-noetic-ros-controllers (0.20.0-1focal.20220519.110704) ...
catkin_make

cd ~/catkin_ws/src
git clone https://github.com/smart-methods/arduino_robot_arm.git
cd ~/catkin_ws

rosdep install --from-paths src --ignore-src -r -y

sudo apt-get install ros-kinetic-moveit
sudo apt-get install ros-kinetic-joint-state-publisher ros-kinetic-joint-state-publisher-gui
sudo apt-get install ros-kinetic-gazebo-ros-control joint-state-publisher
sudo apt-get install ros-kinetic-ros-controllers ros-kinetic-ros-control
sudo nano ~/.bashrc

at the end of the (bashrc) file add the following line
(source /home/wesam/catkin_ws/devel/setup.bash)
then
```

6. install arm package

Activities Terminal Jul 26 22:09

GitHub - jetsonhacks/ins: x s-m.com.sa/ros.txt x Installation/UbuntuARM x

parallels@ubuntu-linux-20-04-desktop: ~/catkin_ws

```
GNU nano 4.8 /home/parallels/.bashrc
sudo # ~/.bashrc: executed by bash(1) for non-login shells.
sudo # see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
sudo # for examples.
sudo # If not running interactively, don't do anything
sudo case $- in
sudo *i*) ;;
sudo *) return;;
sudo esac
echo -e
source # don't put duplicate lines or lines starting with space in the history.
sudo # See bash(1) for more options
sudo HISTCONTROL=ignoreboth
sudo # append to the history file, don't overwrite it
sudo shopt -s histappend
rosdep # for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
sudo HISTSIZE=1000
sudo HISTFILESIZE=2000
mkdir
cd ~/
catkin_make
cd ~/catkin_ws/src
git clone https://github.com/smart-methods/arduino_robot_arm.git
cd ~/catkin_ws
rosdep install --from-paths src --ignore-src -r -y
sudo apt-get install ros-kinetic-moveit
sudo apt-get install ros-kinetic-joint-state-publisher ros-kinetic-joint-state-publisher-gui
sudo apt-get install ros-kinetic-gazebo-ros-control joint-state-publisher
sudo apt-get install ros-kinetic-ros-controllers ros-kinetic-ros-control
source ~/catkin_ws/devel/setup.bash
at the end of the (.bashrc) file add the following line
(source ~/home/wesam/catkin_ws/devel/setup.bash)
then
```

ros-kinetic-list'

rc654