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How to set up your robot

www.pib.rocks/build

installation instructions for: DIGITAL TWIN You Print Build Develop

your own robot!



Software installation

In order to be able to simulate and use the robot without having it physically, it is necessary to install the pib.software on a PC.

This tutorial consists of 3 main steps:

- Install a Virtual Machine on your device
- Download and install Ubuntu
- Install pib.software



Step 1a

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Install a Virtual Machine on your device. We recommend installing Oracle virtual box from this link: https://www.virtualbox.org/wiki/downloads





Step 1b

Follow the recommended installation steps:

Oracle VM VirtualBox 7.0.8 Setup Oracle VM VirtualBox 7.0.8 Setup X **Custom Setup** Welcome to the Oracle VM Select the way you want features to be installed. VirtualBox 7.0.8 Setup Wizard Click on the icons in the tree below to change the way features will be installed. The Setup Wizard will install Oracle VM VirtualBox 7.0.8 on your computer. Click Next to continue or Cancel to exit the - - VirtualBox Application Setup Wizard. Oracle VM VirtualBox 7.0.8 JirtualBox USB Support application. - J VirtualBox Networking JirtualBox Bridged Networking JirtualBox Host-Only Networking This feature requires 121MB on your I VirtualBox Python Support hard drive. It has 3 of 3 subfeatures selected. The subfeatures require 32KB on your hard drive. C:\Program Files\Oracle\VirtualBox\ Location: Next > Cancel Version 7.0.8 < Back Version 7.0.8 Disk Usage

X

Next >

Cancel

Browse



X

Step 1c



Follow the recommended installation steps:

Oracle VM VirtualBox 7.0.8 Setup

Ready to Install

The Setup Wizard is ready to begin the Custom installation.

Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.



Cancel

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< Back

Cancel



Step 2a

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Download Ubuntu desktop version 22.04.2 LTS.iso image from this link: https://ubuntu.com/dowload/desktop

Download Ubuntu Desktop Dr: x + C			- • ×
Ubuntu 22.04.2 LTS The latest LTS version of Ubuntu, for desktop I support — which means five years of free secu until April 2027. Ubuntu 22.04 LTS release notes Recommended system requirements:	PCs and laptops. LTS stands for long-term urity and maintenance updates, guaranteed		
 2 GHz dual-core processor or better 4 GB system memory 25 GB of free hard drive space 	 Internet access is helpful Either a DVD drive or a USB port for the installer media 	Download 22.04.2 For other versions of Ubuntu Desktop including torrents, the network installer, a list of local mirrors and past releases see our alternative downloads.	
Libuatu 22.04			



Step 2b

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Open Oracle virtual box, select "New".





Step 2c

Choose the Ubuntu .iso image downloaded before and name your virtual machine.

	Virtual	machine Name and	Operating S	ystem		
-	Please choo be used thro used to inst	se a descriptive name and destina oughout VirtualBox to identify this all the guest operating system.	ation folder for the n machine. Additional	ew virtual machi Ily, you can sele	ne. The name yo ct an ISO image	ou choose wi which may b
	Name:	pib				
	Folder:	C:\Users\mazen\VirtualBox	/Ms			
	ISO Image:	C:\Users\mazen\Downloads	ubuntu-22.04.2-des	ktop-amd64.iso		
	Edition:					
	Type:	Linux				~ 64
	Version:	Ubuntu (64-bit)				~
		Skip Unattended Installation				
		You have selected to skip un manually.	attended guest OS i	nstall, the guest	OS will need to	be installed
			E	D 1	Neck	C 1



Step 2d

Allocate memory to the virtual machine, recommended settings are shown below.





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🚰 pib [Running] - Oracle VM VirtualBox — 🗆 🗙	Pib [Running] - Oracle VM VirtualBox − □ ×
GNU GRUB version 2.06	Jul 15 18:44 ♣ ♦ 🕅 Install 🗙
*Try or Install Ubuntu Ubuntu (safe graphics)	Welcome
UEM install (for manufacturers) Test memory	English Español Esperanto Euskara Français Gaeilge Galego Hrvatski İslenska Italiano Kurdi
Use the ↑ and ↓ keys to select which entry is highlighted. Press enter to boot the selected OS, `e' to edit the commands before booting or `c' for a command-line. The highlighted entry will be executed automatically in 10s.	Latviski You can try Ubuntu without making any changes to your computer, directly from Lietuviškai this CD. Magyar Or if you're ready, you can install Ubuntu alongside (or instead of) your current No localization (UTF-8) Or any of the second o



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pid [Kunning] - Oracie VM VirtualBox	_		~
Jul 15 18:45		Å	
Install			×
Jpdates and other software			_
What apps would you like to install to start with?			
O Normal installation			
Web browser, utilities, office software, games, and media players.			
O Minimal installation			
Web browser and basic utilities.			
Other options			
🗹 Download updates while installing Ubuntu			
This saves time after installation.			
Install third-party software for graphics and Wi-Fi hardware and addition	al media formats		
This software is subject to license terms included with its documentation. Some is propr	ietary.		

	Install
Keyboard layout	
Choose your keyboard layout:	
English (Australian) English (Cameroon) English (Ghana) English (Nigeria) English (South Africa) English (UK)	English (US) English (US) - Cherokee English (US) - English (Colemak) English (US) - English (Colemak-DH ISO) English (US) - English (Colemak-DH) English (US) - English (Dvorak)
English (US) Esperanto Estonian Faroese Filipino Finish French	English (US) - English (Dvorak, alt. int.) English (US) - English (Dvorak, alt. int.) English (US) - English (Dvorak, left-handed) English (US) - English (Dvorak, right-handed) English (US) - English (Macintosh) English (US) - English (Norman) English (US) - English (US, Symbolic) English (US) - English (US, Symbolic)
Type here to test your keyboard	



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Your name:	pib		0	
Your computer's name:	pib	0		
	The name it uses when it talk	s to other computers.		
Pick a username:	pib 🥥			
Choose a password:	•••••	Fair password		
Confirm your password:		0		
	O Log in automatically			
	O Require my password	d to log in		
	Use Active Directory			



Step 2f

Installation should start automatically and take less than 5 minutes.





Step 2g

Restart Virtual machine to complete the installation.





Step 2h

Please enter to start system and ignore "remove installation medium" part.





Step 2i

Select the setup settings that suit your preference (no specific recommendations).

Activities	🖸 Welcome to Ubuntu	يول 15 21:08	📥 🌒 📋	Activities	🖸 Welcome to Ubunti	u (يول 15 21:09	🗚 🌗 🚺
		Online Accounts	Skip		Previous		Ubuntu Pro	Next
					Enable Ubuntu Pro	,		-
	Conne	ct Your Online Accounts						
	Connect your accou	nts to easily access your online calendar, documents, photos and more.			🗘 Ubun	tu Pro	Upgrade this machine to Ubuntu Pro updates on a much wider range of pa 2032. Fulfill FedRAMP, FIPS, STIG and	for security ckages, until HIPAA and
	Ubuntu Singl	le Sign-On					other compliance and hardening requ certified tooling and crypto-modules machines.	. Free up to 5
?	Google			?			More information on <u>ubuntu.com/pr</u>	<u>o</u> .
0	•••• Nextcloud				Enable Ubuntu Pro for	this installation or	skip this step.	
0	Microsoft			0	Skip for now You can always enable	Ubuntu Pro later via th	ie 'pro attach' command	
	Accounts can be added	l and removed at any time from the Settings application	п.					



Step 2i

Select the setup settings that suit your preference (no specific recommendations).





Step 2j

Ubuntu is now sucessfully installed.





Step 3a

Install pib.software.

Navigate to pib.software setup on Github using this link: https://github.com/pib-rocks/setup-pib



Stand: Juni 2023

Step 3b

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These 3 commands will be used to start pib.software setup.



Stand: Juni 2023

Step 3c

Click on "show applications".



Stand: Juni 2023

Step 3d

Launch terminal.





Step 3e

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Copy and paste the first command in the pib setup repository to download the setup shell script.





Step 3f

Copy and paste the second command to make the shell script executable.





Step 3g

Copy and paste the third command to launch the shell script.



pib (Runnir	ng] - Oracle VM VirtualBox - O X
Activities	; 🕒 Terminal 🛛 Jul 15 23:38 🕹 📫 🗍
-	[F] pib@pib:~ Q ≡ − σ ×
_	Error: near line 121: stepping, UNIQUE constraint failed: MOTOR.name (19) Error: near line 128: stepping, UNIQUE constraint failed: MOTOR.name (19) Error: near line 136: stepping
	Fron near line 135. Stepping, UNIQUE constraint failed: MoTOR.name (19) Fron: near line 142: stepping, UNIQUE constraint failed: MOTOR.name (19) Fron: near line 149: stepping, UNIQUE constraint failed: MOTOR.name (19)
Â	error: near line 150: stepping, UNIQUE constraint failed: MUIUK.name (19) Error: near line 163: stepping, UNIQUE constraint failed: MOTOR.name (19)
)atabase initialized successfully! % Total % Received % Xferd Average Speed Time Time Time Current Dload Upload Total Spent Left Speed
	100 132 100 132 0 0 342 0:-:
•>	100 144 100 144 0 0 363 0:-::-:364 % Total % Received % Xferd Average Speed Time Time Time Current Dload Upload Total Spent Left Speed
	100 214 100 214 0 0 514 0:-::-: 515 % Total % Received % Xferd Average Speed Time Time Time Current Dload Upload Total Spent Left Speed
	100 213 100 213 0 0 499 0:::: 500 Synchronizing state of ssh.service with SysV service script with /lib/systemd/s ystemd-sysv-install. Executing: /lib/systemd/systemd-sysv-install enable ssh
	Congratulations! The setup completed succesfully!
	Please restart the system to apply changes plogpib:-\$

Congratulations

The software setup is completed.

To test the installation, you can try those commands available in pib.setup repository.

Checking if the software started successfully

To check if ROS2 successfully started:
systemctl status ros_cerebra_boot.service
To check if Cerebra successfully started:
sudo systemctl status nginx
To check if the camera node successfully started:
systemctl status ros_camera_boot.service
With the following command, you can check the running ros2 nodes:
ros2 node list

Do you need support?

Or do you need our pib.Box with all non-printable parts? Or maybe you have some new ideas and improvements? Please contact us.



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