How to setup project to showcase, using VirtualBox

(since "xhost + "command is used, it is not possible to run this directly on mac)

Tipp: to paste into ubuntu terminal use shift + ctrl + v

How to setup and run the project:

1. Install VirtualBox
    a. Chose Ubuntu 18.04
        i. Project was built under this OS
    b. give the VM:
        i. 4 cores
        ii. as much ram as possible (I used 6062mb)
        iii. 25 GB HDD
    c. after installation most likely it will remain saying that it uses 1 core only and it will be set to a minimal graphic setting
    d. go to *"Change"* in VirtualBox and adjust this
        i. change in system and in display
    e. change display resolution
2. When in Ubuntu
    a. Install Google Chrome
    b. open terminal:
        i. run commands to update ubuntu
            1. sudo apt-get update
            2. sudo apt-get upgrade
        ii. run commands to install development tools
            1. sudo apt-get update
            2. sudo apt-get install build-essential cmake git
        iii. run commands to prepare docker installation:
            1. sudo apt-get update
            2. sudo apt-get install \ apt-transport-https \ ca-certificates \ curl \ gnupg-agent \ software-properties-common
        iv. add docker GPG key
            1. curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add –
        v. install docker
            1. sudo add-apt-repository \ "deb [arch=amd64] https://download.docker.com/linux/ubuntu \ $(lsb_release -cs) \ stable"
            2. sudo apt-get update
            3. sudo apt-get install docker-ce docker-ce-cli containerd.io
        vi. test installation
            1. sudo docker run hello-world
        vii. install docker compose
            1. sudo curl -L "https://github.com/docker/compose/releases/download/1.25.5/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose

2. sudo chmod +x /usr/local/bin/docker-compose

viii. add user to the group docker so that you can run docker without superuser privileges
    1. sudo usermod -aG docker $USER

ix. restart VM

x. install h264 decoder
    1. docker build https://github.com/chalmers-revere/opendlv-video-h264-decoder.git#v0.0.3 -f Dockerfile.amd64 -t h264decoder:v0.0.3

xi. clone from github
    1. CyberphysicalSystemsProject
    2. cd into new folder
    3. cd into bootUp
    4. open file *"bootup.sh"*
        a. in there you find the commands necessary to run the project
    5. open bootup folder in terminal (right click "open in terminal" in folder)
    6. run
        a. ./bootUp.sh
    7. open google chrome
        a. enter "localhost:8081
        b. click on folder symbol
        c. run a recording of choice (NOT the one that ends with "selection-selection")
        d. always run a recording before trying to run the microservice, otherwise it will fail, saying that no shared memory has been found
    8. open root folder in terminal (CyberphysicalSystemsProject)
        a. run commands found in bootup.sh under "#Commands to run microservice" (build process takes long the first time, that's normal)

Explanation of project structure:

- In root folder (CyberphysicalSystemsProject) you find Dockerfile
    - contains instructions how to build the project, what to put in the docker image, all essentials
- In folder src
    - template-opencv.cpp contains the source code of the algorithm