Program CyberPi with a Third-party Python Editor

The following is a step by step guide for users with Windows. Mac users may use it as a reference.

Quick start for users who already have a Python environment and a third-party editor installed:

- Skip to step 3, or install pyserial and cyberpi libraries with the following commands:
  `pip install pyserial`
  `pip install cyberpi`

1. Set up a Python environment

- Go to the Python.org <https://www.python.org/> to select and download Python for your operating system.
  - Python for Windows: Download <https://www.python.org/downloads/windows/>
  - Python for Mac OS: Download <https://www.python.org/downloads/macos/>

<https://www.python.org/downloads/macos/>

- Click the selected version to install, remember to check **Add Python 3.6 to PATH**, and then click **Install Now**.
- You can also click **Customize installation** to install Python environment to a specified directory.

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2. Install and configure the third-party Python editor (Visual Studio Code as an example)

Note: The steps may vary depending on the editor you are using. It is also recommended that you configure the installed Python environment in the editor.

- Download VS Code according to your operating system. Download VS Code <https://code.visualstudio.com/insiders/>
- Click the downloaded installation package to install it. (Just follow the prompts to install)
- Click the VS Code icon on the desktop to run the program.
- On the left side of the software interface, find the icon in the red rectangle as shown below and click on it.

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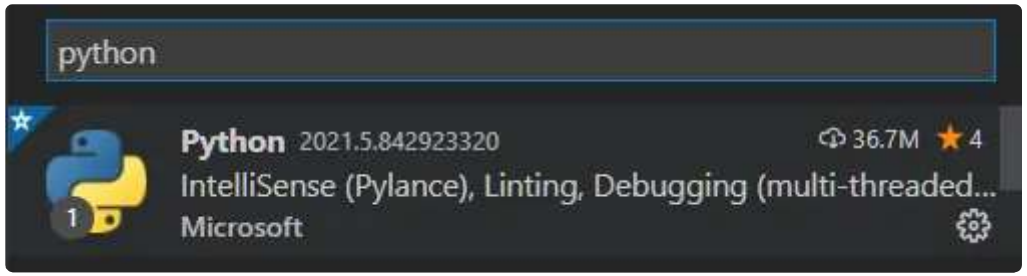
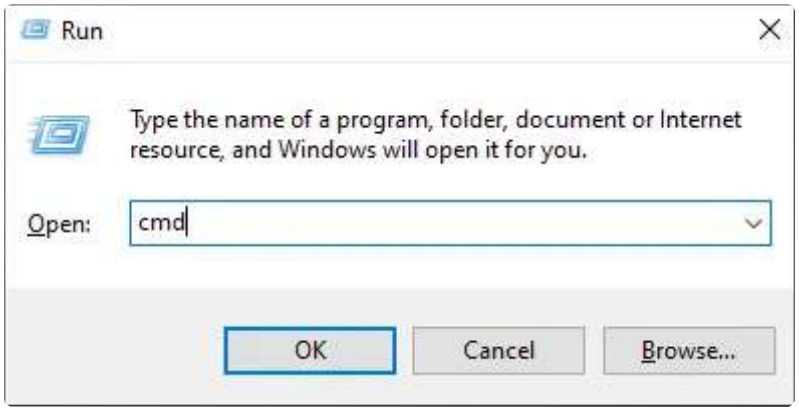
- Search for Python extension and install it. Note that the publisher is Microsoft.

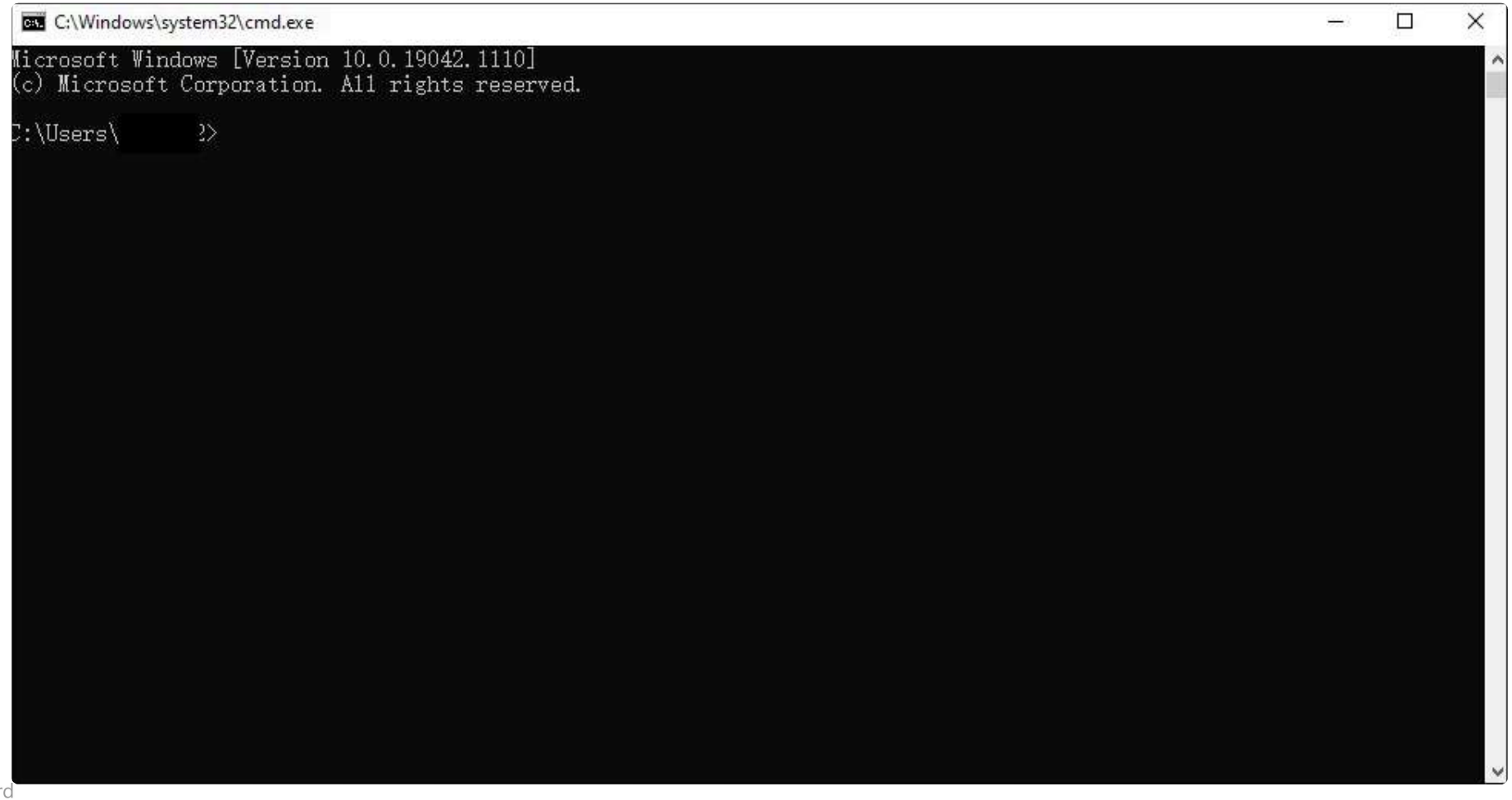


- Configure the previously installed Python environment in VS Code editor.
- Create a new folder and a .py file and you can write basic Python programs.

3. Preparation for programming CyberPi with the third party editor

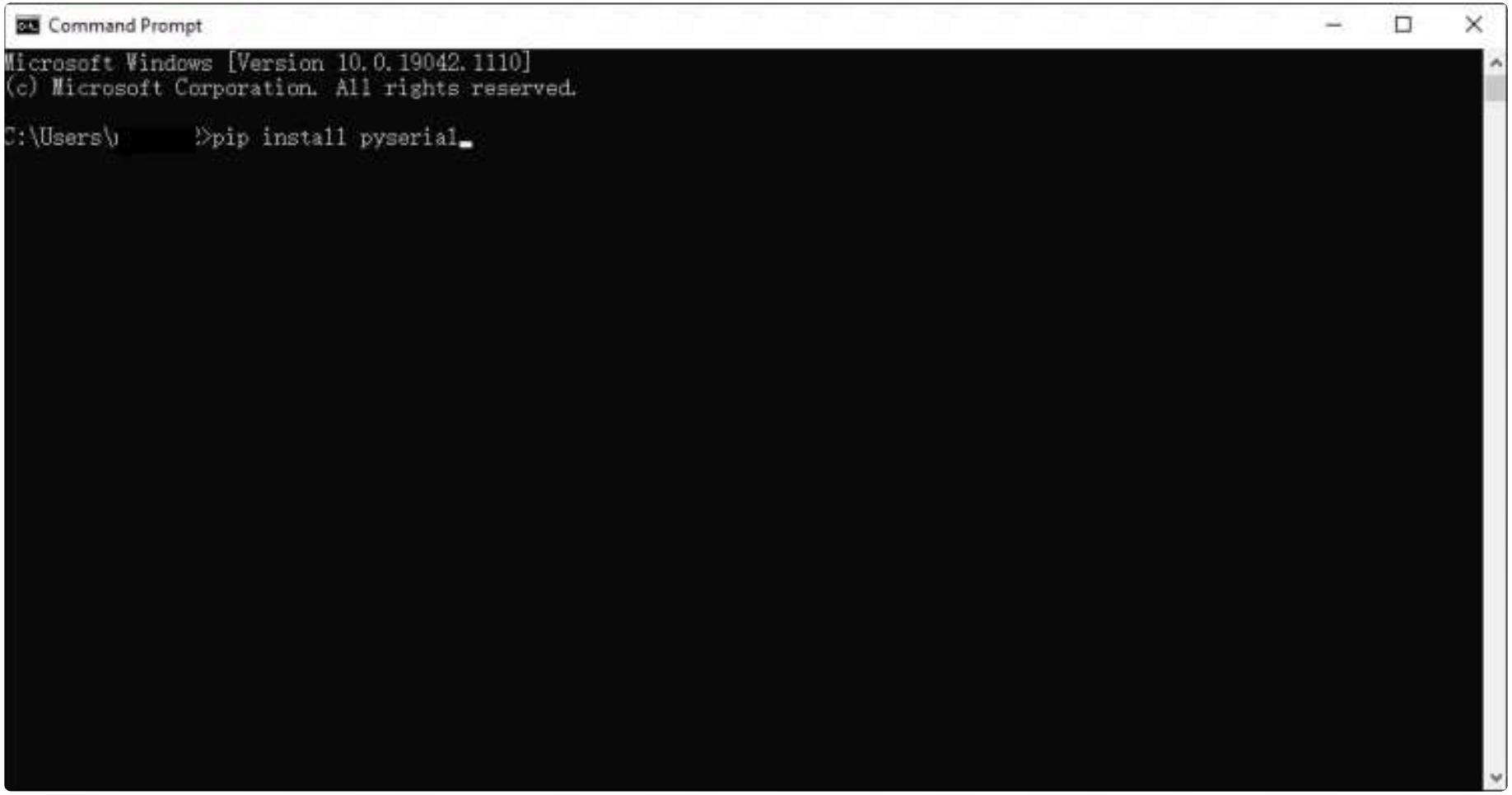
- In Windows OS, press **Windows + R** on the keyboard, type **CMD** and press **Enter**, then the CMD window will pop up.


Run
Type the name of a program, folder, document or Internet resource, and Windows will open it for you.
Open:
cmd
OK
Cancel
Browse...


C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19042.1110]
(c) Microsoft Corporation. All rights reserved.
C:\Users\

- Install pyserial library, which ensures that CyberPi is connected to the third-party editor via USB cable or Bluetooth dongle.

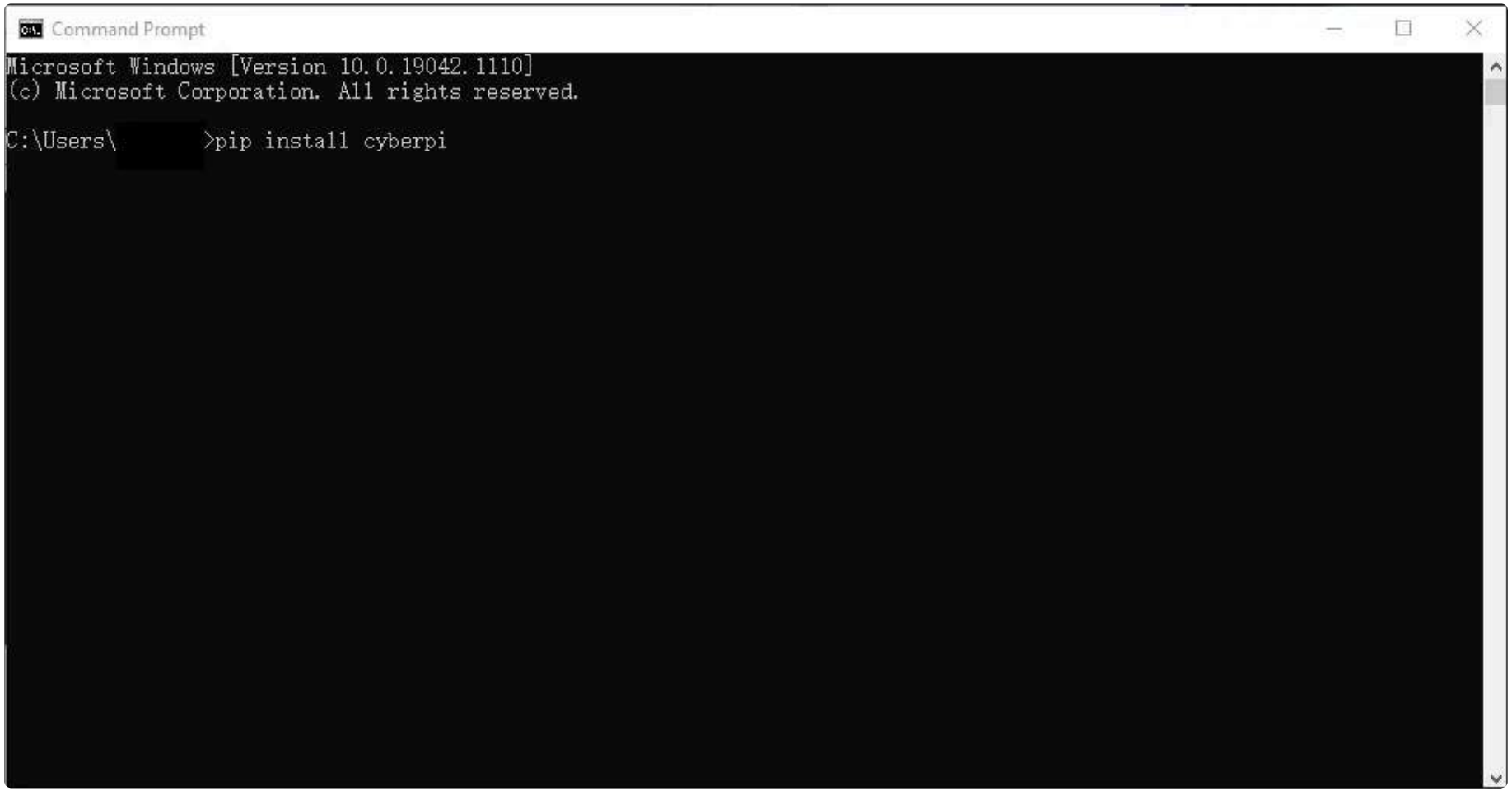
  Type `pip install pyserial` in the CMD window and press enter, wait for the library to be installed.



- Install cyberpi library, which is a Python library used for online programming of CyberPi.

  Type `pip install cyberpi` in the CMD window and press **Enter**, wait until the library is installed.

You can refer to the Python API Documentation for CyberPi <https://www.yuque.com/makeblock-help-center-en/mcode/cyberpi-api> .



- After the installation is completed, you can write programs in the editor configured with the Python environment.

4. Note

The third-party editor currently only supports **online** programming for CyberPi.

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5. Sample programs

CyberPi mouse

Need to install pynput module. Refer to the above step `pip install pynput`

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```python
"""
Name: Cyber Pi mouse
Introduction:
Use the gyroscope module, buttons of Cyber Pi, and the mouse control function of pynput module, to convert Cybe
You can also use the Bluetooth module to convert Cyber Pi into a wireless mouse.

"""
from pynput.mouse import Button, Controller
import cyberpi
import time

mouse = Controller()

while True:
    if cyberpi.is_tiltback():
        mouse.move(-3, 0)
        print(mouse.position)
    if cyberpi.is_tiltforward():
        mouse.move(3, 0)
    if cyberpi.is_tiltleft():
        mouse.move(0, -3)
    if cyberpi.is_tiltright():
        mouse.move(0, 3)
    if cyberpi.controller.is_press("b"):
        mouse.press(Button.left)
        mouse.release(Button.left)
        mouse.press(Button.left)
        mouse.release(Button.left)
    if cyberpi.controller.is_press("a"):
        mouse.press(Button.right)
        mouse.release(Button.right)
    time.sleep(0.01)
```

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CyberPi voice typer

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```python
"""
Name: 074 Cyber Pi voice typer
Hardware: Cyber Pi
Introduction:
Use the voice recognition function of Cyber Pi, and the keyboard control function of pynput module.
The result of voice recognition will be printed out in a file through pynput.
This program currently only supports English.

"""
import cyberpi
from pynput.keyboard import Key, Controller
import time

keyboard = Controller()
cyberpi.console.clear()
cyberpi.led.on(0, 0, 0)
cyberpi.set_recognition_url()
cyberpi.cloud.setkey("Enter the cloud service authorization code")    # You can get it through your mBlock acco
cyberpi.wifi.connect("WIFI name", "WIFI password")
while not cyberpi.wifi.is_connect():
    pass
cyberpi.led.on(0,0,255)
cyberpi.console.println("WIFI connected")
cyberpi.console.println("--------------")
cyberpi.console.println("Press the button A to start voice recognition")
while True:
    if cyberpi.controller.is_press('a'):
        keyboard.press(Key.space)
        cyberpi.console.clear()
        cyberpi.led.on(100, 0, 0)
        cyberpi.console.println("Start voice recognition")
        cyberpi.audio.play("switch")
        cyberpi.console.println("--------------")
        cyberpi.cloud.listen("english", 2)
```

```
        cyberpi.led.on(0, 0, 0)
        say = cyberpi.cloud.listen_result()
        cyberpi.console.println(say)
        cyberpi.console.println("--------------")
        for i in say:
            if i == '':
                 keyboard.press(' ')
            else:
                keyboard.press(str(i))
                time.sleep(0.03)
```

Matplotlib volume histogram

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```python
import cyberpi
import time
from matplotlib import pyplot as plt

plt.rcParams['font.sans-serif'] = ['Microsoft YaHei']
plt.ion()

while True:
    loud = cyberpi.get_loudness()
    plt.clf()
    plt.xlabel("Data name")
    plt.ylabel("Volume readings")
    y_locator = plt.MultipleLocator(5)
    ax=plt.gca()
    ax.yaxis.set_major_locator(y_locator)
    plt.ylim(0,100)
    plt.bar('Volume', loud, align='center',label=f'Temperature{loud}')
    plt.title('Cyber Pi sound sensor readings')
    plt.legend()
    plt.show()
    plt.pause(0.01)
```

Matplotlib multi-chart display

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```python
from matplotlib import pyplot as plt
import time
import cyberpi

loud_list = []
bri_list = []
plt.rcParams['font.sans-serif'] = ['Microsoft YaHei']
plt.ion()
plt.figure(figsize=(10,10))
plt.figure(1)
x_locator = plt.MultipleLocator(5)
y_locator = plt.MultipleLocator(5)
while True:
    loud = cyberpi.get_loudness()
    bri = cyberpi.get_bri()
    loud_list.append(loud)
    bri_list.append(bri)
    battery = cyberpi.get_battery()
    size = [battery, 100-battery]
    status = [f'Remaining power: {battery}%', f'Power used: {100-battery}%']
    ax1 = plt.subplot(221)
    plt.title('Light line chart')
    ax1.plot(bri_list)
    ax2 = plt.subplot(222)
    plt.title('Sound histogram')
    ax2.xaxis.set_major_locator(x_locator)
    ax2.yaxis.set_major_locator(y_locator)
    plt.ylim(0,100)
    ax2.bar('sound', loud)
    ax3 = plt.subplot(223)
    ax3.xaxis.set_major_locator(x_locator)
    ax3.yaxis.set_major_locator(y_locator)
    plt.xlim(0,100)
    plt.ylim(0,100)
```

```
    plt.title('Sound and volume scatter chart')
    ax3.scatter(loud_list,bri_list)
    ax4 = plt.subplot(224)
    ax4.pie(size, labels = status, radius=1,wedgeprops = {'width': 0.3, 'edgecolor': 'w'})
    plt.title('Cyber Pi power')
    plt.pause(0.2)
    plt.clf()
    if cyberpi.controller.is_press('a'):
        break
    if len(bri_list) > 500:
        bri_list = []
        loud_list = []
```

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