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# Instruction on how to run the hand interface







# Dependencies after unzipping the folder

- Python with a version  $\geq 3.5$ . For Windows Users, make sure that the python you have downloaded is in your system path (click the correct bucket of add system path is OK.)
- Package of python: after downloading python, point to the folder that includes requirements.txt in the command line, run  
`pip install -r requirements.txt`
- Visual Studio Code (Install python packages through[1], in last page) or Pycharm, etc.
- An independent web camera.
- (Running for runner)  
Download link for MacOS version:

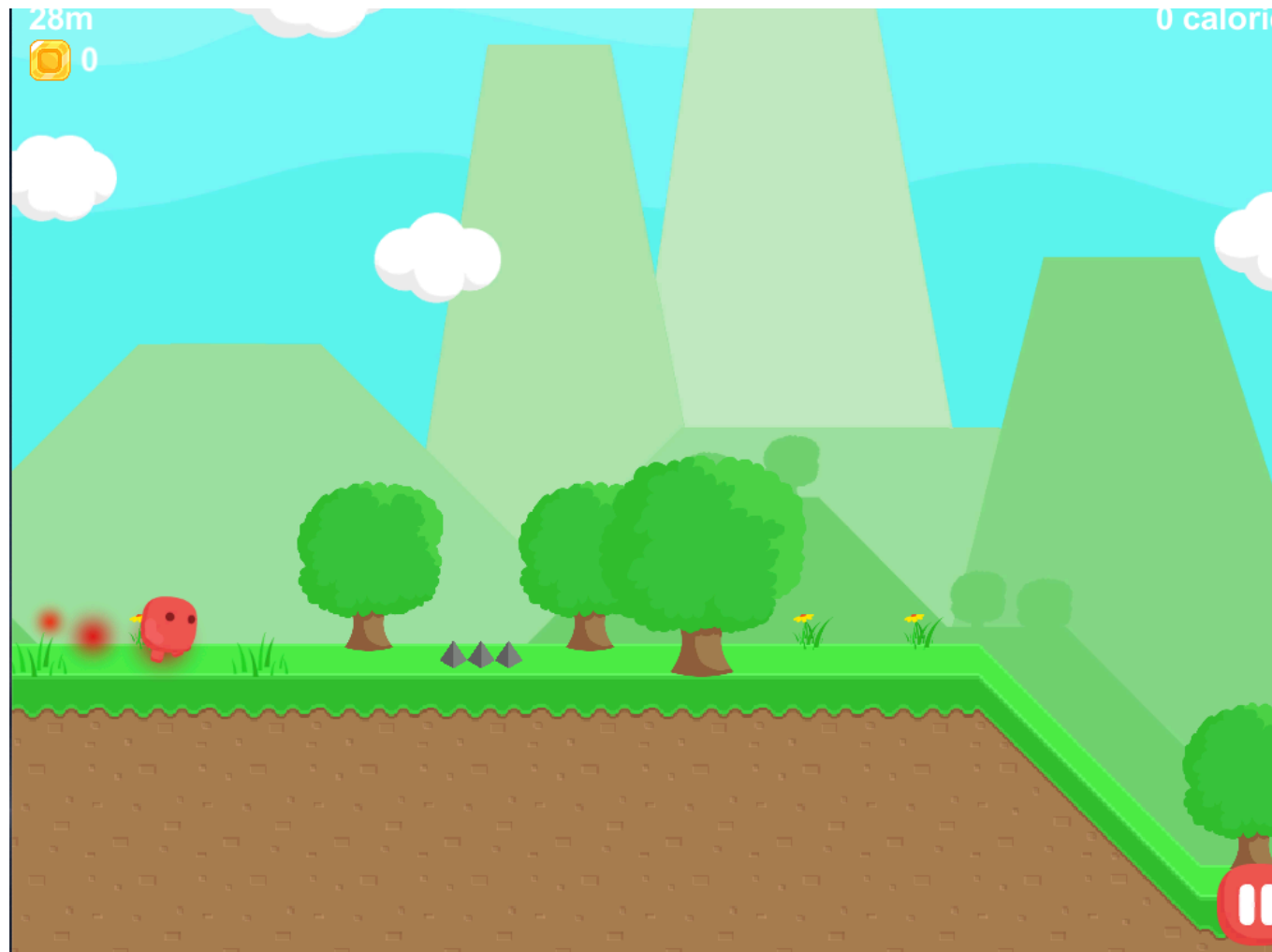
Download link for Windows version:



# Flow of the system on Ukiyoe-monster game

- For MacOS: run demo\_ukiyoe\_os.py.  
For Windows: run demo\_ukiyoe\_windows.py.
- Press OK for camera calibration. Press Rule for understanding the rules of the system([2], in last page).
- On camera calibration: Make your environment attached to a mild light. Make your hands outside the box. If you are ready, press b to start the game.
- In game: 45 sets of monsters appears. The game will finish and return to the camera calibration session. Press r to finish the process and return to the camera calibration session.
- Attention: if your environment of light is not stable, the process will return to the camera calibration and the game resets.
- You can change the details of the functions as you like to improve this system.





# Flow of the system on Runner

- For all OS: run new.py.
- Press b. Make your hands outside the box.
- Make mouse point on the runner game. Start the running game.
- Make your hands inside the box. Then play Runner with your hands by using clenching left hand to jump, and right hand to crouch[4].



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# TODO list

- Easier game explanation
- Adapt this interface to different situation on other games
  - Txt file command transferring
  - Make keyboard commands
  - Activate as a function inside the code
- More high speed
  - The average of activating a keypress event is 0.12s on Macbook Pro 2017.
  - The average rate of correct recognition on hand motion is listed In the graph link below(see [3] in last page.)

Addition

[1] Tutorial on installing Python and Visual studio Code:

<https://www.youtube.com/watch?v=dNFgRUD2w68>

[2] In the Ukiyo-e monster game, You will face some monsters flowing from right to left. More introduction of the game is introduced in this link:

<https://docs.google.com/document/d/1hUIPDjhVsW-NnTrmymXQXUMLT8Zj4KtMfmIZF9h5c2g/edit?ts=5f1059f5>

[3] link on recognition accuracy on testing:

<https://drive.google.com/file/d/1INEpu2pyX23xvqVXj0M-OQES0IGJYHNV/view?usp=sharing>

[4] More on demo video on two games: see the link below

**Runner: <https://youtu.be/NLu-Gw5xVMM>**

**Ukiyo-e monster game: <https://youtu.be/YFqCJ5gPnIU>**