

# Day 1

IPOL and your code

# IPOL online demo

Online demos define:

inputs  
parameters  
outputs

location of the source code  
description of the environment  
command line to execute the method

The screenshot shows the IPOL Journal - Image Processing On Line interface. At the top, there is a navigation bar with links for HOME, ABOUT, ARTICLES, PREPRINTS, WORKSHOPS, NEWS, and a search box. Below this is the title "Python Demo Template" and a sub-menu with "Article", "Demo", and "Archive". A note asks users to cite the reference article if they publish results obtained with this online demo. The "Select input(s)" section features a grid of image thumbnails labeled "Alley", "Book", "Building 1", "Building 2", "Computer", "Dice", and "Flot". The "Alley" input is selected, and a large preview window shows the corresponding image. Below the preview, a zoom slider is set to 1.00x (774 x 518). The "Parameters" section includes a slider for "sigma" with a value of 30 and a "Run" button. A green bar indicates "Execution successful". The "Results" section shows the "Input" and "Output" tabs, with the "Output" tab selected, displaying the processed image. A "Compare" checkbox is also present.

# IPOL online demo

IPOL Journal - Image Processing On Line

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## Python Demo Template

Article Demo Archive

Please cite the reference article if you publish results obtained with this online demo.


Select input(s) Upload data

Alley Book Building 1 Building 2 Computer Dice Flo

Input(s)

input

Crop



Zoom 1.00x 774 x 518

Parameters Efficiency

sigma 30 Noise standard deviation

Run


Execution successful

Results

Input

Output

Compare



```
1 {
2   "general": {
3     "demo_title": "Python Demo Template",
4     "requirements": "docker"
5   },
6   "build": {
7     "url": "github.com:mlbriefs/template-python.git",
8     "rev": "origin/main",
9     "dockerfile": ".ipol/Dockerfile"
10  },
11  "inputs": [
12    {
13      "description": "input",
14      "max_pixels": "3000*3000",
15      "dtype": "x8i",
16      "ext": ".png",
17      "type": "image"
18    }
19  ],
20  "params": [
21    {
22      "id": "sigma",
23      "label": "sigma",
24      "comments": "Noise standard deviation",
25      "type": "range",
26      "values": {
27        "default": "30",
28        "max": "300",
29        "min": "0",
30        "step": "0.1"
31      }
32    }
33  ],
34  "results": [
35    {
36      "type": "gallery",
37      "contents": {
38        "input": {
39          "img": "input_0.png"
40        }
41      }
42    }
43  ]
44 }
```

SSH public key: ssh-ed25519 AAAAC3NzaC1lZDR1NTU5AAAAIYVjRlWooUlvRxbqzrMmC48UyKwRk/Jm3tZOxwh2O

Copy key Reset key

IPOL Journal - Image Processing On Line

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Select input(s) Upload data

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Zoom 1.00x 774 x 518

Parameters Efficiency

sigma 30 Noise standard deviation

Run


Execution successful

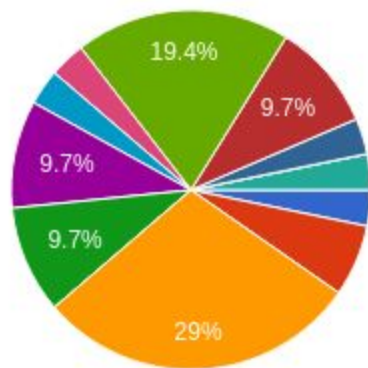
Results

Input

Output

Compare





- C/C++
- Python 3.7
- Python 3.7 (pytorch)
- Python 3.7 (tensorflow)
- Python 3.8
- Python 3.8 (pytorch)
- Python 3.8 (tensorflow)
- Python 3.9

# Today: prepare the code

- Check the code licence if it is not your own
- checkout the template for Python: <https://github.com/mlbriefs/template-python>
- identify the inputs / parameters / outputs of the method
  - type and range for parameters
    - expose them to command line (*argparse*, etc)
  - format for inputs/outputs (images, plots, text, ...)
- list Python requirements (with version number) and system libraries required
- upload large files (weights) to our nextcloud
- the execution shouldn't last more than 30secs (with many cores)
  - reduce the size of the inputs if necessary
- if it runs in a notebook, convert it to a Python script
- make sure the method works as expected locally!

And prepare your one-minute slide too!

# A template for your demo

Take a look at <https://github.com/mlbriefs/template-python>

It's a template for Python code (no template for C/C++/... yet)

Look at the `.ipol/` folder too.

The corresponding demo is here:

public demo: <https://ipolcore.ipol.im/demo/clientApp/demo.html?id=5555550001>

control panel: [https://ipolcore.ipol.im/cp2/showDemo?demo\\_id=5555550001&title=Python%20Template%20Demo](https://ipolcore.ipol.im/cp2/showDemo?demo_id=5555550001&title=Python%20Template%20Demo)

# Clean the inputs / parameters / outputs of the code

Expose the parameters and inputs / outputs filenames:

```
python main.py --input myimage.png --sigma 25 --output result.png
```

In Python, use [argparse](#) or other tools.

On IPOL:

```
python $bin/main.py --input input_0.png --sigma $sigma --output output.png
```

# Clean up the code

Make sure your code can be executed from anywhere on the filesystem:

```
[user@laptop:~/myproject]$ python main.py
...
[user@laptop:~/myproject]$ cd /tmp
[user@laptop:/tmp]$ python ~/myproject/main.py
...
```

Instead of

```
torch.load('weights.pth')
```

use

```
ROOT = os.path.dirname(os.path.realpath(__file__))
torch.load(os.path.join(ROOT, 'weights.pth'))
```

or expose it as parameter

In IPOL, the code is in \$bin, but the execution is elsewhere: “python \$bin/main.py”



# Github invitation

You were invited on a Github repository (in the organization *mlbriefs*)

this will be useful for tomorrow

For now the repository only contains the template, but feel free to start putting your code there

# Upload large files on our nextcloud

Github limits to 100MB per file. After that, the push is rejected and you have to remove the commit from your branch.

Upload your large files (e.g. network weights) somewhere else, or ask us for a solution

Ask us if you have any question (in person or slack)

Q&A document: <https://docs.google.com/document/d/1osB7JiTlhT7BjpPrWQml9TCrQdjLJR1QJxeKlrfLMDI/edit?usp=sharing>  
it will be completed during the week with your questions!

