

Automatic Image Analysis

Exercises 1

Technische Universität Berlin (TUB),
Computer Vision and Remote Sensing Group
Berlin, Germany



Goal

Smooth and binarize image



Goal

Smooth and binarize image

- Simple image preprocessing task
- No own implementation of algorithms necessary, just use of library functions
- Learning goal: get comfortable with the framework

Programming Environment

A) Manage Python libraries yourself

1. Install Python 3.7+
2. Install pip
3. Install opencv, numpy, pytorch etc.

B) Use Anaconda

1. Download Anaconda:
<https://www.anaconda.com/products/distribution>
2. `bash <Download-dir>/Anaconda3.sh`
3. `pip install opencv-python`

C) Use Docker

Python

- Execute program:
 - `python <file.py> arg1 arg2 ...`
- Run interactively:
 - Python
- Install libraries
 - `pip install <package>`
 - `conda install <package>`

Python-Basics

- Dynamic typing
- Indentations are used to structure code
- Try to understand following concepts:
 - Data types
 - Functions
 - Control flow (if, loops, function calls, etc.)

```
import numpy as np
import cv2

# Creating and assigning variables
A = 5
B = "This is a string"
C = [True, 2, "3", 4]
D = (A, B)
B, A = A, B

# Defining a function
def func(x, y, z):

    # if-statements
    if x < 5 and y > 6:
        return True

    # for-loops
    for i in range(10):
        print(i)

    # return
    return x+1, y+z

if __name__ == "__main__":
    a, b = func(1, 2, 3)
```

Handout

- ex1.py contains main-method and TODOs.
Only modify this file!
- utils.py contains helping methods
- test.py checks your implementation
- test.jpg example image

Submission

- The due date for this assignment is April 27th 14:00
- Ask questions in the exercise discussion forum if you get stuck.
- Fix bugs until all tests are completed successfully

Plagiarism

- We take plagiarism seriously.
- If you can't manage to get your stuff done
please ask for help, don't copy from other students/groups
- Plagiarism leads to immediate dismissal from the course
- In extreme cases we can deny the student an exam even in future semesters