

# IT314 – Software Engineering

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## **Lab 5: Static Analysis**

### **Selected Tool and GitHub repository:**

- I will be using mypy tool for static analysis
- GitHub repo: [https://github.com/ageitgey/face\\_recognition](https://github.com/ageitgey/face_recognition)

### **Installation of mypy:**

```
C:\Users\student>pip install mypy
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: mypy in c:\users\student\appdata\roaming\python\python310\site-packages (1.1.1)
Requirement already satisfied: mypy-extensions>=1.0.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from mypy) (1.0.0)
Requirement already satisfied: typing-extensions>=3.10 in c:\users\student\appdata\roaming\python\python310\site-packages (from mypy) (4.5.0)
Requirement already satisfied: tomli>=1.1.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from mypy) (2.0.1)
```

- Mypy was already installed on my machine.

### **Performing static analysis and error understanding:**

1. [https://github.com/ageitgey/face\\_recognition/blob/master/face\\_recognition\\_cli.py](https://github.com/ageitgey/face_recognition/blob/master/face_recognition_cli.py)

```

PS C:\face_recognition\face_recognition> py -m mypy face_recognition_cli.py
api.py:3: error: Library stubs not installed for "PIL.Image" [import]
api.py:3: error: Library stubs not installed for "PIL" [import]
api.py:4: error: Cannot find implementation or library stub for module named "dlib" [import]
api.py:9: error: Cannot find implementation or library stub for module named "face_recognition_models" [import]
face_recognition_cli.py:3: error: Cannot find implementation or library stub for module named "click" [import]
face_recognition_cli.py:10: error: Library stubs not installed for "PIL.Image" [import]
face_recognition_cli.py:10: note: Hint: "python3 -m pip install types-Pillow"
face_recognition_cli.py:10: note: (or run "mypy --install-types" to install all missing stub packages)
face_recognition_cli.py:10: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
face_recognition_cli.py:10: error: Library stubs not installed for "PIL" [import]
Found 7 errors in 2 files (checked 1 source file)
PS C:\face_recognition\face_recognition>

```

## Understanding of errors:

- As per the above photo, all 7 errors are of the importing modules which means mypy was able to find the module I was importing, but no corresponding type hints.
- There are also 3 notes in the analysis. According to me, those notes are for hints or better implementations or some suggestions.
- In the 3rd note it is also giving commands to install missing stub packages.

2. [https://github.com/ageitgey/face\\_recognition/blob/master/face\\_recognition/face\\_detection\\_cli.py](https://github.com/ageitgey/face_recognition/blob/master/face_recognition/face_detection_cli.py)

```

PS C:\face_recognition\face_recognition> python -m mypy face_detection_cli.py
api.py:3: error: Library stubs not installed for "PIL.Image" [import]
api.py:3: note: Hint: "python3 -m pip install types-Pillow"
api.py:3: note: (or run "mypy --install-types" to install all missing stub packages)
api.py:3: error: Library stubs not installed for "PIL" [import]
api.py:4: error: Cannot find implementation or library stub for module named "dlib" [import]
api.py:9: error: Cannot find implementation or library stub for module named "face_recognition_models" [import]
face_detection_cli.py:3: error: Cannot find implementation or library stub for module named "click" [import]
face_detection_cli.py:3: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
Found 5 errors in 2 files (checked 1 source file)
PS C:\face_recognition\face_recognition>

```

## Understanding of errors:

- As same as the above file analysis, all 5 errors are of the importing modules.
- There is also a note in the analysis which is suggesting to see the webpage for more information and two notes are giving commands to

install missing stub packages.

3. [https://github.com/ageitgey/face\\_recognition/blob/master/face\\_recognition/api.py](https://github.com/ageitgey/face_recognition/blob/master/face_recognition/api.py)

```
PS C:\face_recognition\face_recognition> python -m mypy api.py
api.py:3: error: Library stubs not installed for "PIL.Image" [import]
api.py:3: note: Hint: "python3 -m pip install types-Pillow"
api.py:3: note: (or run "mypy --install-types" to install all missing stub packages)
api.py:3: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
api.py:3: error: Library stubs not installed for "PIL" [import]
api.py:4: error: Cannot find implementation or library stub for module named "dlib" [import]
api.py:9: error: Cannot find implementation or library stub for module named "face_recognition_models" [import]
Found 4 errors in 1 file (checked 1 source file)
PS C:\face_recognition\face_recognition>
```

## Understanding of errors:

- As same as the above file analysis, all 4 errors are of the importing modules.