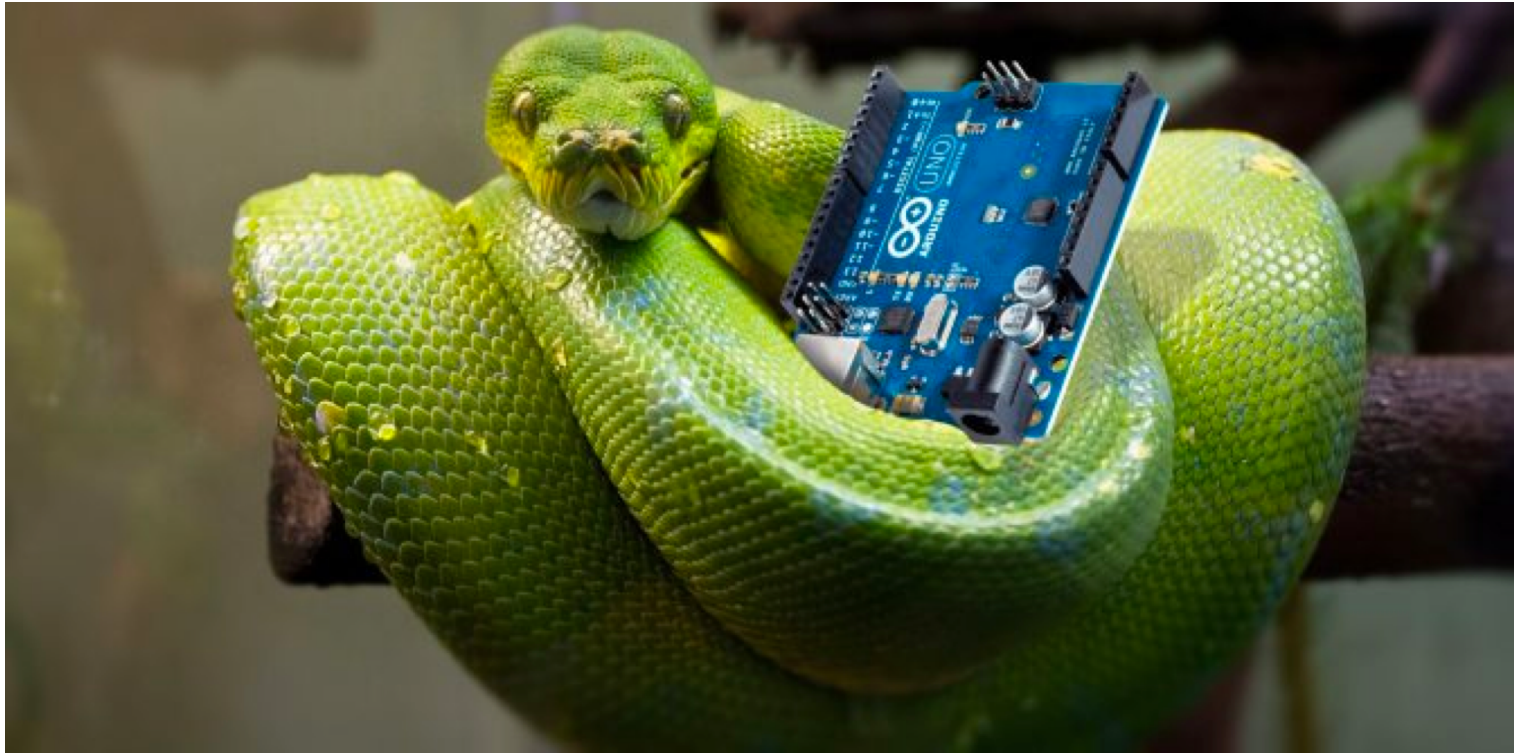
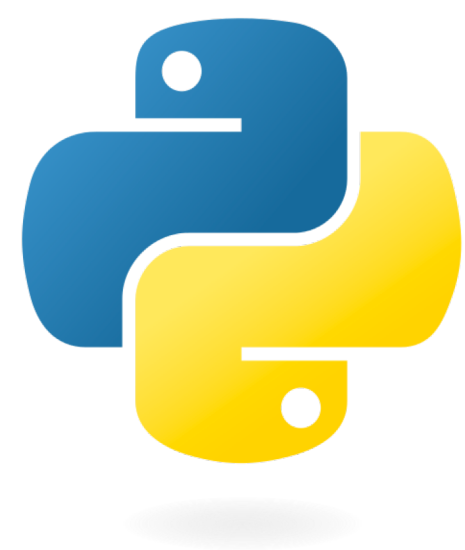


# Python ??!??





python<sup>TM</sup>



# What ?

- Programming language
  - High-level, general purpose
  - Dynamic types, auto memory management
  - Object-oriented
- Interpreted
- Open-source
- Community-based
- Created by Guido van Rossum 1991 ; python3 in 2008 ; Monty Python ; py-something



## *Zen of Python*

- Beautiful is better than ugly
- Explicit is better than implicit
- Simple is better than complex
- Complex is better than complicated
- Readability counts



# Interests and limitations

- Community
- Libraries
- Prototyping, scripting, data analysis
- #4 of all lang, #1 for machine-learning,

Drawbacks and limitations:

- Not as fast as other lang
- Tends to be difficult for large projects



## Libraries

- matplotlib
- numpy
- simpleITK
- SciPy
- ...



Easy to install : ie

```
pip install numpy
```



## Example

```
x = 34 - 23      # x is a nb
y = "Hello"     # y is a string
z = 3.45
if z == 3.45 or y == "Hello":
    x = x + 1
    y = y + " World"
print(x)
print(y)
```



# Language

- Data types: lists, tuples, dictionaries
- Use indentation rather than braces
- Slicing

```
x = (23, 'toto', 5.2, 'titi')  
y = x[1:3]  
print(y) # will be ('toto', 5.2)
```

- Main drawback: type errors are only caught at runtime





## Example (dictionary)

```
x = { name:'toto', birth:1995}
```

```
print(x)
```

```
print(x.name)
```

```
print(x['birth'])
```

```
k = 'birth'
```

```
print(x[k])
```

```
x.birth = 1994
```



# Ressources

- Thousands of web tutorials, courses
- Tons of IDE (pycharm, anaconda, atom etc)  
(integrated development environment)
- Q&A : stackoverf

