PYTHON
(LEARNING BY CHALLENGES & PROJECTS)

ISII Marconi - Piacenza (Italy)

Main educational goals

1. Spread a new ways to teach Python on high schools
2. Prepare students on Artificial Intelligence and Robotics subjects

Project features

1. Learning <u>for all lessons</u> by challenges
2. Challenges of the first & second year based on <u>real life</u>
3. Projects based on <u>Robotics and Artificial Intelligence</u>

Contents (First Year)

Programming Environment
Data structure basics
Comparison and logical operators
Statements
Lists, Tuples, Sets, Dictionaries
Functions
I/O management
DB management

Contents (Second Year)

Object Oriented Programming
Modules and Packages
Errors and Exceptions
Decorators/Generators
GUI
Scraping
Working with images
Emails

Challenge examples

First year: mortgage calculator
First year: credit card validator
First year: log events recording
First year: airport DB management

Second year: web scraping
Second year: image filtering by OpenCV
Second year: sending/receiving emails

Project examples

AI: license plate recognition
AI: face detection
AI: objects detection

Robotics: simple manipulation by a collaborative robot
Robotics: remote controlled robot car using Raspberry Pi