A workshop for students on programming sensors with Python

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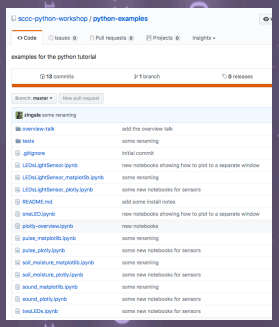
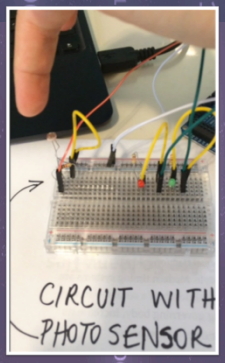
http://www2.sunysuffolk.edu/denicog/python_workshop.html
https://github.com/sccc-python-workshop/python-examples

During Fall 2016 we implemented a pilot workshop at SCCC to train students on programming sensors using the computer language Python. Our goal was to focus on the graphical interpretation of the data collected by the sensors, therefore we chose Python (in Jupyter notebooks) because it offers advantages for graphical visualization of data over other languages. The sensors were controlled by an Arduino, which interpreted the code in Python via a StandardFirmata protocol. The workshop was free, and open to students of all disciplines during four weeks during common hour. The twenty participants learned basic aspect of Python, Arduino, and circuitry. Students worked with sensor for light, sound, pulse, and soil moisture. We plan to offer it again Fall 2017, add more sensors to the list, expand the workshop schedule, and include group projects. The material for the workshop is available online at the url above. Previous to the workshop, to attract students' attention, we had a public talk by Prof. Zingale on "The power of Python".

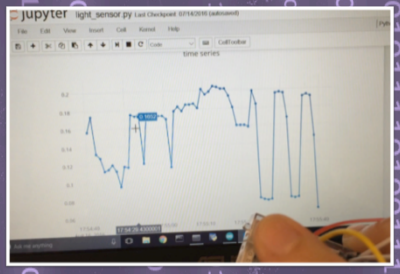
	Program	Presentations: files and/or links used
Day 1: Oct 5	• brief introduction to the language Python; • use Python to generate random numbers; • introduce the library plotly and/or matplotlib; • plot a real-time streaming graph of the generated random numbers; • the graph can be accessed using a URL if plotly is used (subject to internet connection during common hour at SCCC). All Python codes used during the workshop will be available at: https://github.com/sccc-python-workshop/python-examples.	
Day 2: Oct 19	• introduction to Arduino; • build a simple circuit containing an LED and a light sensor; • write a Python code to command the LED to blink according to the signal from the light sensor; • run the firmata protocol on the Arduino software (enabling communication via Python); • run the Python code.	
Day 3: Oct 26	• use circuit with light sensor (same as day 2); • write Python code to plot the real-time reading of the light sensor; • run the firmata protocol on the Arduino software (enabling communication via Python); • run the Python code to visualize the graph; • the graph can be accessed remotely using a URL.	
Day 4: Nov 2	• build a circuit with a different sensor (choices provided on the day); • write Python code to plot the real-time reading of the sensor chosen; • run the firmata protocol on the Arduino software (enabling communication via Python); • run the Python code to visualize the graph; • the graph can be accessed remotely using a URL.	



Flyers advertising workshop and public talk on "The power of Python"



List of materials purchased with the help of a local grant



Handouts given to students, and powerpoint slides used