SMS: Smart Mobile Systems @ UPMC

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With the Help of:
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Announcements

- **October 25th 2016**
  - **NO Laboratory**
  - **Lecture as usual at 10.45**

Projects - NON CODING

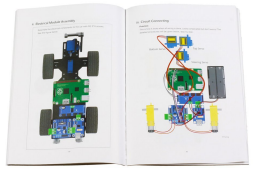
- **If you do not want or like to write C++ code you can chose to do a NON Coding project:**
  - You will be given a topic, and
  - you will be given an area of expansion
- **Your Job is:**
  - Select 4-5 relevant research papers
  - Summarize the thesis and arguments
  - Add your critical thinking
  - Produce a report of 10-12 pages + references that collects all the above

How do I select Papers

- **Use the Internet**
  - http://scholar.google.com/
  - Papers impact is estimated by the number of Citations
  - You should pick research papers not survey papers
  - Group size for this is 1 person
  - Max Value is 6.
- **Bottom line with this path:**
  - Project=8
  - Final= 12
  - Total maximum=20

Advanced Projects #1 (Invitation Only)

- **You get 2 car kits with**
  - Car
  - WiFi
  - Camera
  - Rasperry PI
  - Libraries



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Advanced Projects #1

- **Your Job:**
  - Mount Car and Control it
  - Develp a V2V protocol that allows cars to prevent crash
  - Design a small test scenario to be tried in Campus
- **Phase 2:**
  - Use the camera with some Visual Analitics to do object recognition/tracking and aid the driving.
    - Open CV
    - Deep Learning
  - This can be done in parallel while one part of team is building the car the other can play with the camera and the video-analytics on an Raspberry PI.
  - The visual analytics could be performed using edge-cloud techniques. (i.e. partially in the Raspberry partially on Amazon/Azurre

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Advanced Projects #1

- **Outcome:**
  - Software
    - Documentation
  - Demo
  - Small Report
- **Perks:**
  - This is a one stop-SMS shop: NO Final, No other projects, No exercises.
  - Max Value= 20
- **Warnings:**
  - This is an hard core research project
  - Requires to learn many new things and to be proficient in coding.
  - Its really IoT hands on.

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Advanced Projects #2

- **UPMC with the Macau Polytechnic Institute have designed and built a low cost pollution sensor for:**
  - Personal Exposure Monitoring
  - Environmental Alarm
  - Mobile Sensing
- **The sensor captures information on**
  - PM
  - Humidity
  - Temperature
  - Pressure
  - GPS
- **Sends them to a cloud server via Wireless**

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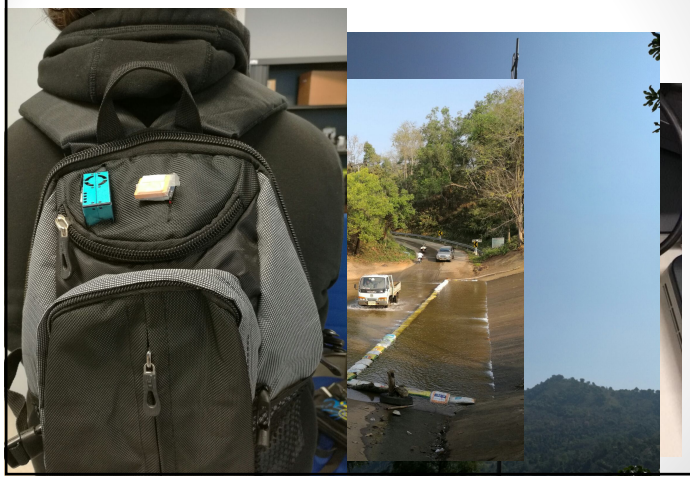
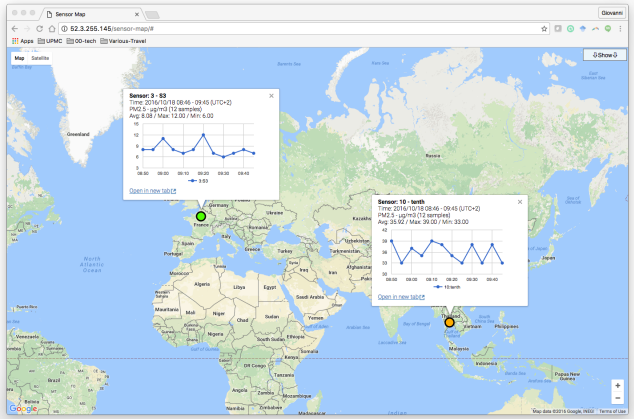
Advanced Projects #2



Current Interface



Advanced Project #2

- **Your Job**
  - Design an Android/iPhone web-app for the sensor network
  - App shall be able to take your current position and report the status of the closest K-sensors.
  - Should work and be deployable on the Market of Choice
  - Shall compute your exposure
    - You will get help for this
- **Phase 2:**
  - Performing Data Mining and Deep Learning on the data set
    - Find correlations between:
      - Pollution/Traffic
      - Speed of pollution travel
      - Age and exposure
      - Etc
  - Add this on the App and/or as analytic tool on the web.

To Be Continued

Questions?

Thank you for your attention.

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