



Grantee: Bratislav Predić, Faculty of Electronic Engineering
University of Nis, Serbia
Host: Zhixian Yan, EPFL, Switzerland
Duration: August 26, 2012 – September 9, 2012

1. Purpose of the STSM

- Exchange the previous works in the field of participatory sensing that have been done independently by Faculty of Electronic Engineering, University of Nis and EPFL.
- Integrate previously implemented activity and event recognition modules based on accelerometer data with air quality and pollution data acquired from *OpenSense* project developed by EPFL.

2. Description of the work carried out during the STSM

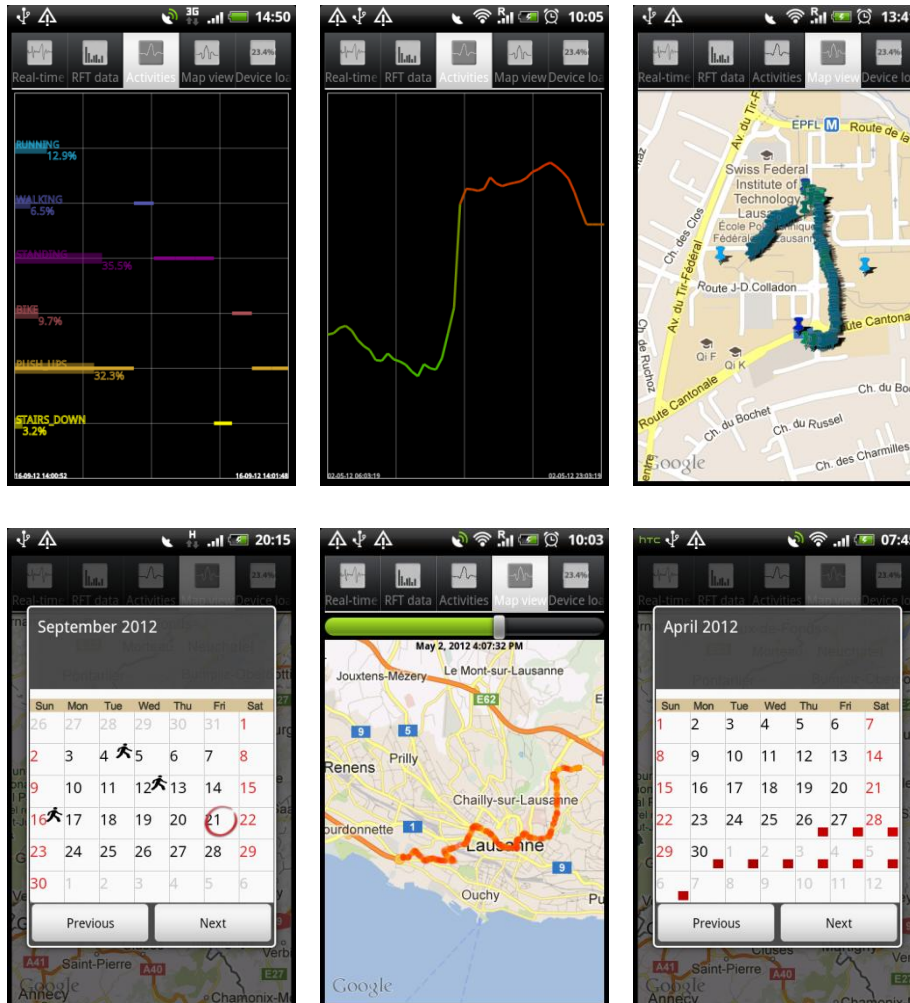
- Study the open source mobile sensing platform FUNF (<http://www.funf.org>).
- Develop new FUNF probe module encapsulating different real-time activity and event detection algorithms.
- Study *OpenSense* (http://opensense.epfl.ch/wiki/index.php/Main_Page) air quality mobile sensor data collection network.
- Develop data integration and visualization scheme for offline *OpenSense* data in history review mode.
- Study Global Sensor Network – GSN (<http://sirpeople.epfl.ch/hauswirth/papers/LSIR-REPORT-2006-006.pdf>), a streaming repository for massive deployments of distributed sensor nodes.
- Plan for integration of mobile client application with GSN for real-time air quality data access.
- Develop various mobile client data visualization widgets. This includes timeline real-time and history review widget and geospatial map view visualization widget.

3. Description of the main results obtained

- Android mobile client was developed as a basis for activity data acquisition and visualization of activity, events and air pollution data
- FUNF framework was integrated with developed Android mobile client
- A new FUNF probe module was developed as a flexible host for various

activity recognition and events detection algorithms.

- Two sensor data visualization widgets were developed. Timeline and mapview widgets can be used for both real-time data visualization and in history review mode
- Basic architectural foundations were implemented for future integration with GSN
- Basic architectural foundations were implemented for future use of mobile phones as mobile air quality sensing nodes (with appropriate hardware developed at EPFL)



4. Future collaboration with host institution (if applicable)

- Continue work on the developed Android mobile client application mainly in the direction of integrating it with GSN and using it as a mobile air quality sensor node (with additional hardware developed at EPFL).
- Improve modularity of the developed activity and event detection module and test various detection algorithms.
- Integrate real-time activity and air quality data with user's social activities inferred from phone usage statistics.
- Evaluate power usage and performance issues of the developed modules

5. Foreseen publications/articles resulting or to result from the STSM (if applicable)

- A paper to be prepared for a domain journal or conference in the 2013.

6. Confirmation by the host institution of the successful execution of the STSM

Mr Bratislav Predic's mission in our laboratory has been an undoubtful success. The collaboration was excellent and as can be seen from the "STSM Scientific Report" results are very encouraging. Bratislav worked closely with several members of our group in the domain of participatory sensing and crowd sourced information retrieval. Both our laboratories share common interest in this field and have previous research results. During his stay Bratislav successfully combined these results creating added value to research performed by both our laboratories. During his STSM Bratislav proactively took part in research activities of our lab. Long term collaboration has been agreed on in the form of joint publications which is a certain proof of success of Bratislav's STSM.

7. Other comments (if any)