Universal personal sensors are changing our everyday life
Hervé Bourlard, Technology in Review, New York Times, September 5, 2015

Society has recently witnessed the emergence of a new and more "intelligent" breed of computing systems that can relieve humans of the many burdens inherent in the use of and communication with increasingly complex systems. Such systems are now making many new applications possible, from autonomous home appliances to intelligent assistants that keep track of private and office operations, and respond to and act in the real world. Building upon advanced (open) software, reconfigurable and easily compatible hardware ("smart chips"), and integrating recent advances in perception, reasoning, representation and learning, it is now possible to deliver systems that can collaborate with many types of devices, towards interpreting, physically interacting and communicating in real-world environments to perform task-oriented and automatically adapt and expend their memory.

One example illustrating the potential of such systems is the recent emergence of personal wearable systems that can be dynamically composed out of different devices that are heterogeneous in terms of both form and function. Composition can be achieved merely via physical and "natural" proximity-based "commands" and without any explicit input commands. The system and applications adapt their functionality depending on the number and type of devices available, and peripheral devices, e.g., situated in the surrounding environment (including physical and virtual networks) are also exploited "en passant", resulting in full "personalization" of "any" device, and featuring full adaptability and learning capabilities, thus exploiting localization and user profile (taking into consideration culture, religion, etc).

Along this line, Nokia recently released a multi-purpose "Personal Sensor" (PS), which is no longer a mere telephone or a "Smart Phone/Pocket PC" but a real sensing device, which can still be used as a telephone and an agenda, of course, but which can fully exploit multiple (audio, video, GPS, etc) sensors to be fully context-aware and automatically get in tune with our daily life. This PS can indeed use multiple sources of information such as the time of operation, the location of the user, the weather, the velocity of the user, and many other environmental information to improve the capabilities and quality of the interaction between the user and services, environments, and other human beings, including, e.g.:

- Interaction between the user and services: accessing large amounts of distributed multimedia data; taking a picture, which would automatically bring you to relevant web pages; computational photography (e.g., digital photography and processing/structuring on the same device), etc
- Interaction between the user and his/her environment: when at home, the device automatically turns into a remote controller, capable of controlling your TV, and perform most functions required by home automation.
- Interaction between people. The device can be used as a recorder and "universal memory" of your social activities…