EU funds research on the “Wize Mirror” to help people staying healthy

To prevent the diffusion of cardio-metabolic diseases, the European Commission has funded an ICT-for-Health research project that will develop a self-monitoring system, having the aspect of a mirror, named “Wize Mirror”, able to guide individuals towards healthy lifestyles.

The cost of current health systems grows exponentially with the widespread use of complex, and often inappropriate, diagnostic procedures, as well as with population ageing. This is particularly true in the case of cardiovascular and metabolic disease. The strategy of prevention, which attempts to modify some pathophysiological factors related to the genesis of the disease, is the only way to limit the epidemic growth of cardio-metabolic diseases. Educational programs and lifestyle interventions, aimed at enhancing individual’s awareness, represent effective tools for reducing risk and incidence of cardio-metabolic diseases.

In this perspective, the European Commission has decided to fund the SEMEOTICONS Project. The project will develop innovative methods and tools and integrate them into a self-monitoring system able to provide personalized guidance against improper or dangerous life-styles.

Moving medical semeiotics to the digital realm

According to medical semeiotics, human face is a precious revealer of key information about the healthy or unhealthy status of individuals. The central idea in SEMEOTICONS, which stands for SEMEiotic Oriented Technology for Individual’s CardiOmetabolic risk self-assessment and Self-monitoring, is to exploit the face as a major indicator of individual’s well-being by tracing traits of physical and expressive status.

In accordance to a semeiotics viewpoint, face signs will be mapped to measures and computational descriptors, automatically assessed. SEMEOTICONS will design and construct an innovative multi-sensory system integrated into a hardware platform having the exterior aspect of a mirror: the so-called “Wize Mirror”. This will easily fit into users’ home or other sites of their daily life (e.g. fitness and nutritional centers, pharmacies, schools and so on).

Daily self-monitoring of individuals’ wellness

The Wize Mirror will collect data mainly in the form of videos and images. These will be processed by advanced dedicated methods to extract biometric, morphometric, colorimetric, and compositional descriptors derived from individual’s face. The “wellness index”, derived from the integration of such descriptors into a Virtual Individual’s Model, will trace and monitor the daily evolution of individual’s status.

Suggestions and coaching messages will be provided to foster the maintenance of a correct lifestyle or reduce noxious habits. Users will be enabled to share data in their diary with health professionals so as to receive, when needed, direct expert guidance and support.
Wize Mirror validation

Medical experts will validate the system with respect to the reproducibility of measurements, the efficacy in detecting changes in well-being and cardio-metabolic status as well as the acceptability by the end-users.

The exploitation of the Wize Mirror is expected promote new aggregations between health and well-being actors including industry, fitness, and schools. Furthermore, significant effects towards the development of new prevention strategies of cardio-metabolic diseases are expected, with positive impacts on the reduction of avoidable disease burden and health expenditures.

SEMEOTICONS consortium includes ten partners from 7 countries (France, Greece, Italy, Norway, Spain, Sweden, United Kingdom). Six research institutions, both ICT and medical, and four industries are involved in the project that will be coordinated by the Italian National Council of Researches (CNR). Three medical centers located in Pisa, Milan, and Lyon will support research and industrial partners and will host the Wize Mirror testing.