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How can the Internet of Things and people help improve our health, wellbeing and quality of life?

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Prof. Maged N. Kamel Boulos introduces his Keynote talk at the 4th EAI International Conference on IoT Technologies for HealthCare, Angers, France, October 24, 2017.

The Internet of Things (IoT) is made of sensors and other components that connect our version of the world made of atoms (i.e., us humans, our devices, vehicles, roads, buildings, plants, animals, etc.) with a mirror digital version made of bits. This has the potential of enabling cities and regions, urban and rural, to be self-aware and dynamically reconfigurable in real- or near-real-time, based on changes that are continuously monitored and captured by sensors, similar to the way the internal biological systems of a living being operate and respond to their environment. Data collected by various IoT sensors can also help predict the immediate future with reasonable accuracy, which enables better planned responses/mitigation.

Furthermore, IoT can link atoms (humans) to other atoms (humans) (again via bits), resulting in the formation of 'smart(er) communities' that actively engage citizens in a smarter governance of their place, empower them to better care for one another ('Uber-isation' of health and social care), promote stronger social inclusion, and ensure a greener, sustainable and more enjoyable environment for all.

But IoT has been abused to "solve problems" that are not really problems, while posing serious security, individual privacy and 'infoglut' challenges, and fuelling rampant consumerism. From connected cars, smart fridges and plants fitted with sensors to smart water bottles and umbrellas, everyday objects are becoming increasingly connected to the cloud and to apps running on our smartphones, with variable utility and impacts ranging from trivial or 'gimmicky' (no practical value or advantage) to truly transformative results that have the potential of improving the health, wellbeing and overall quality of life of individuals and whole populations.

This keynote will focus on several exemplary uses of IoT in the areas of environmental and public health (e.g., air quality and noise and light pollution), telehealthcare/ambient assisted living, and personal health, drawing on the authors' experience in recent EU research projects. Smart nutrition is one these exemplary uses that will be very briefly presented.

Overweight and obesity are a documented leading risk factor of major non-communicable diseases. The keynote will briefly touch on how IoT applications in the domains of food and nutrition informatics, fitness tracking, and gamified motivation and engagement could help tackle these major public health problems through well-tailored P5-Health-compliant e-interventions (Precision, Predictive, Preventive, Personalised and Participatory Health).

The keynote will also discuss the challenges and caveats associated with IoT, including those related to security (can be life-threatening) and individual privacy. While research was successful at documenting and highlighting the risks associated with IoT deployments in health/care, the industry has somewhat failed to follow and tackle those issues, focusing more on rapid profit generation and usability (user convenience). Device and service security and user privacy are often addressed as an afterthought, if at all, even though they should be given prominent priority from the very early concept and design stages.

Let us build together an Internet of Things and People, a more secure Internet promoting better personal health, and stronger social inclusion and cohesion, rather than one feeding aimless consumerism and deepening the digital (literacy) divide in our societies. Let us always begin with real world problems, exploring and harnessing suitable technologies to solve them, rather than start with the latest technologies, trying to create and enforce unneeded applications of these technologies.

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