

Computing for Human Experience: Sensing, Perception, Semantics, Social Computing, Web 3.0, and beyond

Amit Sheth

Today, systems and devices enable something more than a “human instructs machine” paradigm. In the past, we had to artificially simplify the complexity and richness of the real world to constrained computer models and languages for more efficient computation. Now, computing, ubiquitous communication and sensing has started to become part of the ether—disappearing in the background, but monitoring, guiding and enriching human activities. Correspondingly, we are seeing sensing, semantics, and social computing to work in concert—multisensory devices, interactions involving multisensory and multimodal information engage transparently in human activities to enriching them in ways not possible before. Citizen sensors (or participatory sensing) and citizen journalism are early examples of these. Increasingly intelligent systems are more “aware” of events and situations— they not only deal with simple objects such as documents or entities, but also support situational awareness by incorporating relationships between objects and the temporal (“when”), thematic (“what”) and spatial (“where”) aspects of objects and events.

This emerging era of “computing for human experience” involves a seamless interaction between the physical world and the virtual or cyber world with advanced integrated capabilities in sensing, perception and awareness of the physical world (e.g., in extending sensory engagement with environments and narrowing the gaps between the real world and computing), using “humans as sensors” of intentions and emotions, understanding (semantics), using historical facts and community generated knowledge and collective intelligence, while integrating online and offline interactions.

This vision builds upon applications and infrastructures embodying the principles of computing for richer human experiences that include [Internet of Things](#), [Intelligence@Interfaces](#), [MyLifeBits](#), [linked data](#), [Open Social](#), reusable knowledge bases ([Semantic Web](#) or Web3.0) and [Semantic Sensor Web](#). It also borrows aspects from other exciting visions such as Ambient Intelligence, [Humanist Computing](#), [Relationship Web](#), [PeopleWeb](#), [EventWeb](#), and [Experiential Computing](#). Also see: <http://knoesis.wright.edu/aboutus/press/Research.pdf>

Vita:

[Amit Sheth](#) is a researcher, an educator and an entrepreneur. He is the LexisNexis Ohio Eminent Scholar at the Wright State University. He directs the [Kno.e.sis Center](http://knoesis.org) (<http://knoesis.org>) which performs leading research in Semantic, Social, Sensor and Services computing over Web. Prof. Sheth is an IEEE fellow and is among the [best-cited authors in computer science](#) (h index = 58, 30 paper with 100+ citations each). He has given more than 200 invited talks including 34 keynotes, is the EIC of ISI indexed Intl. Journal of Semantic Web & Information Systems (<http://ijswis.org>), is joint-EIC of Distributed & Parallel Databases, is series co-editor of two Springer book series, and serves on several editorial boards. By licensing his funded university research, he has also founded and managed two successful companies. Several commercial products and many operationally deployed applications have resulted from his R&D.

