

Computing for Human Experience:

Sensing, Perception, Semantics, Social Computing, Web 3.0, and beyond

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Abstract

Today, systems and devices enable something more than a “human instructs machine” paradigm. In the past, we had to artificially simplifying the complexity and richness of the real world to constrained computer models and languages for more efficient computation. Now, we are seeing sensing, semantics, and social computing to work in concert--multisensory devices, computing, and communication involving multisensory and multimodal information engage transparently in human activities to enriching them in ways not possible before. Citizen sensors 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 intensions 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 [Humanist Computing](#), [Relationship Web](#), [PeopleWeb](#), [EventWeb](#), and [Experiential Computing](#).

Biographical Sketch

[Amit Sheth](#) is the LexisNexis Ohio Eminent Scholar at the Wright State University. He directs the [Kno.e.sis Center](#) (<http://knoesis.org>) which performs leading research in Semantic, Social, Sensor and Services computing over Web. Prof. Sheth is an IEEE fellow, has received awards such as the IBM Faculty award, and is among the [best-cited authors in computer science](#) (h index = 57, 26 paper with 100+ citations each). He has given more than 200 invited talks including 30+ keynotes, is 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.