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Wearable Computing: Towards Humanistic Intelligence

Submission deadline: Wednesday 14 February 2001
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Motivation

Over the past 20 years Wearable Computing has emerged as the perfect tool for embodying Humanistic Intelligence (HI). HI is defined as intelligence that arises from the human being in the feedback loop of a computational process in which the human and computer are inextricably intertwined. When a wearable computer functions in a successful embodiment of HI, the computer uses the human's mind and body as one of its peripherals, just as the human uses the computer as a peripheral. This reciprocal relationship, where each uses the other in its feedback loop, is at the heart of HI.

There are three fundamental operational modes of an embodiment of HI: Constancy, Augmentation, and Mediation. Firstly, there is a constantly of user interface, which implies an "always ready" interactional constancy, supplied by a continuously running operational constancy. Wearable computers are unique in their ability to provide this "always ready" condition which might, for example, include a retroactive video capture for a face recognizing reminder system. After-the-fact devices like traditional cameras and palmtop organizers cannot provide this retroactive computing capability. Secondly, there is an augmentational aspect in which computing is NOT the primary task. Again, wearable computing is unique in its ability to be augmentational without being distracting to a primary task like navigating through a corridor, or trying to walk down stairs. Thirdly, there is a mediational aspect in which the computational host can protect the human host from information overload, by deliberately diminished reality, such as by visually filtering out advertising signage and billboards.

Implicit in the Augmenting and Mediating modes is a spatiotemporal contextual awareness from sensors (wearable cameras, microphones, etc.).

As an example of H.I., it is now possible to build a miniature nearly invisible apparatus for lifelong video capture, that can also predict or infer and distinguish from among threat or opportunity based on previously captured material. Such computing blurs the line between remembering and recording, as well as the line between thinking and computing. Thus we will need a whole new way of studying these new human-based intelligent systems. Such an apparatus has in fact already raised various interesting privacy and accountability issues. Thus HI necessarily raises a whole new set of humanistic issues not previously encountered.

For this special issue we seek papers describing intelligent systems that include the human as an integral part of the system. Preference will be given to papers describing systems that actually demonstrate the integration of human-computer adaptation, intelligent real-time action, reasoning, learning, and control, or that focus on a specific clearly stated problem or clearly stated scientific hypothesis.

Submission Guidelines

Authors should note that IEEE Intelligent Systems is a scholarly peer-reviewed publication that is intended for a broad research and user community. Therefore an informal, direct and lively writing style should be adopted, while at the same time still maintaining a high degree of quality in the actual research that is reported. Manuscripts should be original and should have between 6 and 10 published pages (not more than 7500 words) with up to 10 references. For additional details, please refer to our author guidelines. Manuscripts should be sent to mann@eecg.toronto.edu in uuencoded gzipped PostScript format, along with LaTeX source if present, or including raw ASCII article text (not more than 80 characters per line), if typeset in a program other than LaTeX. If filesize is large, Manuscripts should be passed by reference not by value (e.g. email a URL where a gzipped PostScript file and ASCII text can be retrieved). Proprietary file formats such as msword will not be accepted.

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