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Human Design: Building Computation around Human Networks

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Abstract: Computer technology has mostly focused either on the isolated individual, or has treated the person as a clueless extra wandering in a computer-controlled environment. Researchers seem to have forgotten that people are social animals, and that the quality of their lives is defined by their roles in human organizations. Instead of inventing technology for the individual as an isolated entity, why not invent systems that support people's organizational roles? Or even invent new types of organizations? My colleagues and I are inventing technology that can potentially produce organizations that are more creative and efficient, and that better support the individual. At the personal scale to support family networks, at the organizational scale to support innovation, and at the national scale to support economic growth in developing nations, we are finding that shaping computation to support social networks can produce great rewards.

Keywords: interactive technology, human design, human network

1 Introduction

Humans and machines are interacting ever more closely, and this is changing both the structure of human organizations and the experience of the participants.

We ask how technology can enhance the individual in order to produce organizations that are more creative and efficient, and that better support the individual.

Our work focuses at three scales:

- the individual, where we are augmenting people with wearable computers that enhance their memory, skills, and situational awareness,
- the group, where we are using wearable sensors to map group social dynamics and expertise, allowing `smart' networks to support group performance
- the nation, were we are developing active network technologies that support social goals such as improved health, learning, and entrepreneurship

2 Individual: Wearables

Research on intelligence is mostly about investigating how brains work, or building intelligent machines or creating smart environments such as a house that can identify and track its occupants. But what about making people smarter? The easiest way to improve intelligence is by augmenting the items we wear all the time-glasses, wristwatches, clothes and shoes-with miniature computers, video displays, cameras and microphones. These high-tech "wearables'' can extend one's senses, improve memory, aid the wearer's social life and even help them stay calm and collected. For more detail see: http://www.media.mit.edu/wearables/

3 Group: Reality Mining

Reality Mining is a novel methodology in computational social network analysis, to generate a comprehensive informal knowledge management system, to instigate high-potential collaborations, and to understand the ramifications of organizational disruption. Although existing corporate information repositories can be easily analyzed using standard data mining operations, the output reflects a severely limited

view of an organization's knowledge resources. Simply looking at static employee surveys, or data limited to email or the Internet, ignores the vast majority of tacit knowledge within an organization.
Augmenting traditional knowledge management techniques with current speech recognition tools will give managers the ability to visualize and query the vast, dynamic knowledge repositories that remain untapped within their organization. Additionally, by leveraging recent advances in machine learning, robust computational models will simulate the effects of organizational disruptions in the existing social networks. This will allow managers to preview the ramifications of decisions such as relocating a group to a different building or merging two departments. For more details see http://reality.media.mit.edu

4 Nation: Unwiring the World

For the first time, your location no longer limits your ability to communicate. From anywhere in the world—mountain, jungle, or city—you can now telephone, email, and Web browse using a pocket-sized, battery-powered wireless communicator whose components cost only a few dozen dollars. For less than the typical IMF bailout, we can now unwire the world, making available first-class educational material, medical advice, business communications, and the arts to every family on earth through wireless communication. For additional details see: http://dn.media.mit.edu

References

[For papers and detailed project information see

http://www.media.mit.edu/research/group.php?id=12

http://web.media.mit.edu/~sandy/