Designing bio-wearable computers to expand interactions between bodily spaces and physical environments

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I. EXTENDED ABSTRACT

This research presents and discusses the Design-Neuroscience cooperation in the design of organic interactions with the physical environment afforded by wearable bio-computers. It is based on the contributions of studies related to the paradigm environment / behavior / neuroscience 1, 2, 3, 4, 5, 6, 7, 8 regarding the identification and recognition of neurophysiological information relevant to design research and practice. It also discusses the Neuroscience-Design relationship in the projectual practice of the bio-wearable computer NeuroBodyMimeses addressing the interaction between the body’s user (neurophysiological signals and brain waves), the digital technological system and the physical environment by employing wearable bio-computers. 9, 10, 11, 12

According to Poissant 13, interfaces are becoming more natural and may take, alternately or simultaneously, extensible, enlightening, rehabilitative and filter functions or act as agents of synaesthetic integration. In the opinion of Bureaud 14, interfaces, seen as sensory organs, generate a deconstruction of the usual modes of perception, as a kind of fragmentation/displacement of the body that leads to reflection on these modes of perception, to questions about the nature of space in which this body exists and fundamentally redeﬁnes itself as human.

As a device focused on the social interaction in physical space, the wearable bicomputer NeuroBodyMimeses establishes a direct relationship between the physical environment and the user’s body, from the real-time detection and interpretation of the user’s emotional state. In situations of increased anxiety and stress, for example, this wearable bio-computer modifies the visual appearance of its surface, in immediate response to the user’s neurophysiological changes due to their interaction with the surrounding space, and it can even mimic the visual standards of this environment. Thus, this device intends to give to the user’s body the “regency” of social visibility in physical environments, releasing it, for example, from facing confrontational situations when it is not prepared for such, from the neurophysiological standpoint.

II. REFERENCES


AUTHOR BIO

Dr. Zuannon is the coordinator of the PhD and Master’s Design Program at the Anhembi Morumbi University, Brazil. Researcher and professor in the same Design Program, she is also a designer and media artist. CEO of the All Affective Design for Innovation and of the Zuannon Integrated Solutions. Head of CHiPq research group “Design, Creative, Language and Technology” and Brazilian leader in the research project “Persim. Time Interactive Convergent Project”, focused on the development of innovative wearable interfaces for games held in international cooperation with OCAD University (Toronto), Xemophile Media (Toronto) and Zuannon Integrated Solutions (Brazil) and supported by STIP 1 FARESP. Author of several scientific works, she had presented her research in EUA, Canada, China, Japan, Singapore, Taiwan, Germany, Greece, Portugal, Turkey, UK, Vienna, and many other places around the world. She is also an Ad-hoc Assessor for the most important Brazilian Agencies for scientific research support, as FAPESP and CAPES. She is dedicated to research in design of bio-wearable computers since 1998. In 2010, in PhD and Master’s Design Program, she founded and since then she coordinates the Sense Design Lab – a laboratory dedicated to support researches focused on Design and Neuroscience relationship. She was granted the privilege of displaying the “Neurobodygame – Co-evolving affective wearable computer #1” artwork as PLE PRM LUX 2010 Finalist at SES-SP Art Gallery Exhibition in 2008, featured “Biobodigame – Co-evolving affective wearable computer #2” artwork at Gameplay exhibit, held by Itaú Cultural in 2017, she won Rumos Artes Cibernética prize with Biocymetric Relational Object – Co-evolving affective wearable computer #2. In 2006, she had the artwork “Co-evolving affective wearable computer” exhibited at Primeira Perspectiva exhibition, held by Itaú Cultural. In 2015, this very same research was granted an honorable mention from Rumos Itaú Pesquisa. She was a finalista for the Rumos Dance 2003 – Videoarte award, granted by Itaú Cultural. She received the APCA award in 2000, granted by Sao Paulo Association of Art Critics. In 1999, she was a VITA fellow in two residencies programs at the American Dance Festival.

FIG. 1. NEUROBODYGAME: WAREABLE BIO-COMPUTER (© 2012, Zuannon & Lima Junior)