

論文の内容の要旨

論文題目 Basic Research in Human-Computer-Biosphere Interaction
(計算機を介した人と生態系のインタラクションに関する基礎研究)

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This paper presents the author's vision of Human Computer Biosphere Interaction (HCBI): Towards a Sustainable Society. HCBI extends the subject of HCI from countable people, objects, pets, and plants to an auditory biosphere that is uncountable, complex, and non-linguistic. By realizing HCBI, soundmarks in a forest can help us feel as one with nature, beyond the physical distance. The goal of HCBI is to realize an ecological interaction between human and nature through computer systems without causing environmental destruction. In doing so, there will be physical separation between them but informatical connection between them. The combination also drives ecological reversible interaction between them. This paper presents the concept overview, related work, the method and developed interfaces. Using a pre-record call of animals, it produces bio-acoustical feedback from the target wildlife. This paper especially focuses on design and evaluation of the bio-acoustical interaction system by a networked remote sensing embedded system. The system consists of a tracking collar, microphone, speaker, infrared camera, infrared heat sensor, micro-climate sensor, radio-tracking, GPS, radio clock, embedded Linux boards, high capacity battery and high speed wireless communication device. Second, this papers proof that bioacoustic based food chain information in biosphere is a nonverbal information interface among human, computer, and biosphere. Therefore, it provides an interaction with life in ecosystem such as wildlife animals. Third, the study investigates the potential application of wildlife presence detection method based on their voice print detection and remotely controllable capacitance sensor for wildlife telemonitoring in ecological study. In doing so, computer system can be a part of a global ecosystem.