Ubiquitous Computing meets Ubiquitous Music

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1. Extended Abstract

Ubiquitous computing (Ubicomp) is computing everywhere, anywhere [Langheinrich 2001] anytime [Coroama et al. 2004] and also computing in anything and everything [Greenfield 2006]. Is is also called Invisible computing [Borriello 2008], Pervasive computing [Satyanarayanan 2001], Everyday computing [Abowd and Mynatt 2000] among others. Despite the different names, Ubicomp is a way to see computers where several devices typically have to work together to perform a particular task creating smart environments [Coroama et al. 2004] or intelligent environments [Brumitt et al. 2000].

Nowadays (2014) music devices are ubiquitous in daily life. Increasingly, we are seeing computational systems incorporating sensors such as microphones and headphones outputs [Bellotti and Sellen 1993] and transforming several daily devices into ubiquitous music devices. The popularity of Ubicomp with the evolution of musical devices guided this concept to arts in a field called Ubiquitous Music (Ubimus).

Ubimus concepts and motivations, defined by Keller [Keller et al. 2009], includes to merge sound sources and music interfaces with the environment in a ubiquitous form. Previous research and efforts from the Ubiquitous Music Group included several discussion involving Collective creation [Ferraz and Keller 2014], Interaction aesthetics [Keller et al. 2014], Methodology for creativity-centered software design [Lima et al. 2012], Open issues in current musical practices [Keller et al. 2011] and other relevant aspects of social and musical dimensions.

Beyond the musical and social discussion in Ubimus, we believe that computer scientists can also take part of this research field once we can find a clear way to contribute with Ubimus researches. Regarding the technological point of view, Ubimus, like Ubicomp, is not a particular research field in Computer Science. Ubimus merge Ubicomp research field with fields defined in Sound and Music Computing and / or Computer Music.

Computer Music and Sound and Music Computing involves several subjects on Computer Science field namely: Music Information Retrieval (MIR), Sonic Interaction Design, Mobile Music Computing, Live Coding, Networked Music Performance, Human-Computer musical interaction, New Interface for Music Expression (NIME), Digital Audio Effects, Languages for Computer Music and more

The possibility of doing all these Computer Music activities on mobile devices for computing (like mobile phones, tablets and netbooks) [Lazzarini and Yi 2012] can emerge as the Ubimus research field to computer scientists.

To try to map a computer science research field in Ubimus is not an easy task. It is possible to fall into a gap between technological possibilities and our ability to put them to good useful. For this reason, maybe it is completely useless to develop Ubimus hardware or software without some partnership with musicians, composers and artists, without focusing that our main goal is not to develop technology to technology but to music. The partnership can help a scientist to find a human need, a need of expression, a impossible musical creation that only this kind of devices can bring to real.

Most part of Ubimus issues should not be solved in technological field but in social fields. Nonetheless, without the support of computer guys is not easy to social scientists to break the barriers of technology and create new concepts using technology.

Keller [Keller et al. 2010] describes Ubimus as "An Uncharted Territory". Music researchers are doing their work. Maybe it is time to start exploring this territory quirks in computer science field.

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