Thesis Proposal, Project in|situ|

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Title : Mobile Co-Adaptive Instruments
Project : in|situ|, INRIA Saclay – Île-de-France

Description: We are developing a novel theoretical framework based on *co-adaptive instruments* that treat interaction between people and computers as a first-class object. The goal is to significantly empower users, providing a simpler, yet more powerful style of interaction with a coherent interface for controlling a variety of interactive devices, from interactive paper to smart phones to wall-sized displays.

The Ph.D. candidate will begin with a review of the related literature and conduct empirical studies of users, especially those who have difficulty using current mobile devices. Using participatory design techniques, the student will explore a variety of alternative co-adaptive instruments that enable users to interact successfully on mobile and other devices. After conducting field and laboratory experiments to test these co-adaptive instruments, the student will design and implement a toolkit that supports creation of mobile co-adaptive instruments.

Skills required: Experience in participatory design of interactive systems, programming in C++ or Java, experience implementing interactive systems on mobile platforms. Ability to design, conduct and analyze controlled laboratory experiments. Ability to conducted critical incident interviews and design, run and analyze the results of a field study.

References:

Beaudouin-Lafon, M. (2000) Instrumental Interaction. In *Proceedings of ACM CHI 2000 Conference on Human Factors in Computing Systems*.

Beaudouin-Lafon, M. and Mackay, W. (2000) Reification, Polymorphism and Reuse: Three Principles for Designing Visual Interfaces. In *Proceedings of the International Conference on Advanced Visual Interfaces* (AVI 2000). ACM, pages 102-109.

Mackay, W. (2000) Responding to cognitive overload: Co-adaptation between users and technology. *Intellectica*. Vol. 30 (1), pp. 177-193.

Mackay, W. (2008) From Gaia to HCI: On Multi-disciplinary Design and Co-adaptation. In *HCI Remixed, Reflections on Works That Have Influenced the HCI Community*, pages 247-251. MIT Press.