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Application Details
Short Term Scientific Mission (STSM)
Universitat Pompeu Fabra, Barcelona, Spain
28.10.2004-8.3.2004

Work Plan:

Since 2003 I have been working on consumer-grade tangible interfaces, with particular focus on music applications. While at the University of York, UK, I developed *d-touch*: a framework for implementing tangible interfaces based on computer vision. A number of applications have been developed using this framework both in York and at Media Lab Europe (MLE). From November 2003 to February 2004 I collaborated with Martin Kaltenbrunner from Universitat Pompeu Fabra (UPF), while he was visiting MLE, to integrate *d-touch* in a prototype of *reactTable** (the UPF tangible electronic music instrument).

The purpose of this STSM is to further investigate tangible interfaces for music applications aiming at identifying opportunities for longer term research projects. The work will include the enhancement of the current version of the *d-touch* framework improving the status of the *reactTable** prototype.

The computer vision engine in *d-touch* is based on the use of markers. These are recognized using an inexpensive web-cam on a consumer-grade personal computer. The markers can be applied to ordinary objects to make them interactive and hence produce tangible user interfaces that are versatile and inexpensive to build. These characteristics support the design of educational and entertainment applications for home and school environments.

The existing work can be expanded both from the technology and application points of view. Different image processing approaches can lead to faster performance, sensing techniques alternative to computer vision (e.g. capacitive sensing) can enable different interaction forms. Different mapping strategies can radically change the effectiveness and intuitiveness of the interfaces.

Project References:

Kaltenbrunner, M., O'Modhrain, S., Costanza, E., "Object Design Considerations for Tangible Musical Interfaces", in Proceedings of COST287-ConGAS Symposium on Gesture Interfaces for Multimedia Systems, Leeds UK March 2004

Costanza, E., Shelley, S. B., Robinson, J., "d-touch: a Consumer-Grade Tangible Interface Module and Musical Applications", in Proceedings of Conference on Human-Computer Interaction (HCI03), Bath September 2003.

Estimated Cost Plan:

(all amounts in Euro)

Flight Dublin-Barcelona-Dublin: 180

Additional Transport Costs: 50

Daily Costs (accommodation etc.)

Total days 12

Working days 6

Travel days 2

Estimated 50. (per working day): 300

Estimated Total Cost: 530