MAP-i: Doctoral Programme in Computer Science 2013-14

Thematic area: **Computer Communications and Pervasive Media**

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Thesis proposal

This proposal is framed by the Juxtalearn project, where video creation and sharing are used as a tool to encourage reflection on threshold concepts [1], i.e. concepts that constitute learning barriers. Video performances are seen as an education process in which, through video creation, students can identify misunderstandings and overcome their learning difficulties. Videos themselves are the central element of that process, but they are not the main outcome. In particular, videos are not seen as a finished product, but as performance that evolves with the learning process and the collaborative dialog that may emerge from video sharing.

The videos are assumed to be primarily aimed for the Internet, where they will be available for viewing and commenting using standard web browsers. However, in this work, we aim to explore the distinctive role that situated displays at public locations in schools can have in the entire process. By public space, we mean communal spaces in schools, outside the classroom context. This is aligned with Goodyear's view of how there is a shift in our sense of the spaces and contexts in which education takes place, as different learning activities are becoming more commonly distributed across a variety of contexts [2]. The presentation of the videos on the public displays must be part of the whole process and somehow add value as an extended performance space. We thus framed the problem in terms of the unique value proposition offered by public displays, rather than as a mere problem of how to extend the web context to this medium despite the differences.

To promote engagement from people watching the videos, but also to increase the value to the overall process, video performances on the public displays should be interactive. They should allow people to engage with the performance in a way that is rewarding for them and that enriches the performance itself. We thus assume that students will not simply be viewers of videos but they will also be able to annotate them or in some other way engage with the respective content using mobile devices.

Research challenges

Understanding the role of public displays

While there seems to be an obvious potential in the use of public displays as a complementary medium to in-class and web-based learning, there is not much knowledge about how exactly to optimise their role in the process. A key challenge is to design the system in a way that maximizes its value for the video performances and this requires some reflection on the intended value to be offered by public displays in the context of video performances. In particular, public displays should not be seen as simply an additional channel for presenting the videos. Extending video sharing and presentation from the web context to the public displays needs to take into account a significant number of specific challenges associated with this medium, but also the new opportunities that this particular medium can create for video performances. In particular, it should be clear in what ways the use of public displays as complimentary medium may enrich the overall experience of video creation and sharing. A key research question is thus the identification of the contributions of the medium to global objectives such as learning, stimulating curiosity by the topics or simply increasing awareness about the respective videos. This may involve the study of how the on-line activities that students will be doing, could be complemented, incentivized or reinforced by the presence of public displays and the shared experiences they may enable. It will also consider how the activity around the videos on the public display may contribute more effectively to enrich the whole video performance.

Interaction and engagement

Public displays need to do more than simply presenting videos, as that would not easily lead to the type of engagement that is required to sustain learning processes. Creating appropriate interaction mechanisms to foster interaction between users within the school/educational context and the videos is a key challenge. Even though interaction support has been one of the most active areas in public displays research, there are still no interaction models that are mature enough for generalized support for interaction with public displays. The challenges involved are not merely technical, as they also involve the emergence of accepted interaction practices and social rules around the shared use of displays. A number of research challenges emerge directly from this need to support interaction, such as the interaction techniques, the shared interaction between multiple users, the awareness about the interaction of others and all the additional issues associated with moderation and control when annotating videos.