

Cuypers Meets Users: Implementing a User Model Architecture for Multimedia Presentation Generation

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Abstract

With the rapid growth of interest in the Internet as a means for accessing multimedia presentations for education, entertainment and commerce, comes a corresponding need for systems to supply automatically generated, personalised presentations. Multimedia is a rich and complex genre of resources and the interrelated effects of content, style and structure ensure that automatic presentation generation is in itself a complicated and challenging task. Integrating a model for user personalisation adds a further layer of complication and ensuring that the requirements of user, supplier and platform are all met is a demanding undertaking. This project investigates the influence of information about a user in the process of generating a multimedia presentation.

1. Overview

Traditional difficulties in user modelling such as retrieving accurate information about the user are exacerbated in the transient environment of the Internet and the implementation of constantly adapting interfaces is compounded by the increased complexity of a multimedia presentation. Therefore a solution is, by the very natures of both multimedia and users, complex and often incomplete. This project investigated a possible solution under development by Susanne Loeber [1] and applies it to Cuypers [2], a prototype system for automatically generating multimedia presentations developed by CWI.

Loeber's Model uses the principles of Persona Theory, Situated Action Framework and the Motivation-Ability-Opportunity model to describe an architecture with a user-centred, context driven approach to modelling that focuses on the relationship between the user and the author of the presentation or site. To achieve this a set of structured user profiles are created which use information about the user, as it becomes available, to refine the applied profile based on the projected impact on the user's motivation-ability-opportunity levels in their interactions with the

site. The opinions and requirements of the creators of the site also impact the choices.

The main issues identified in the project were:

- The difficulty in creating, recording, selecting and adapting the large numbers of user profiles needed to encompass the potential audience.
- The impact of progressive interface adaptation on the user. This is in direct opposition to the general interface design rule advocating consistency.
- Modelling multimedia presentations as 'interactive' with an involved *user* as opposed to a passive *viewer*.
- Quantifying the Motivation-Ability-Opportunity levels for application within a software architecture.

In conclusion, this project sought to investigate the application of Loeber's model to a real system and to incorporate user influence into Cuypers. This has been achieved by implementing the framework of Loeber's approach with a sample impact upon colour choices. The architecture now in place has the potential to be extended and applied to other areas such as text size and style, speed and structure. This has increased the capacity for generating personalised multimedia presentations and has demonstrated some of the benefits and potential issues with Loeber's approach to user modelling.

References

- [1] S. Loeber, "Modelling the audience of a web-based presentation: context-driven, rhetorical role-playing approach", *Eleventh European Conference on Cognitive Ergonomics*, Catania, Italy, September 2002, pp.251-258
- [2] J. van Ossenbruggen, J. Geurts, F. Cornelissen, L. Rutledge and L. Hardman, "Towards Second and Third Generation Web-Based Multimedia" *The Tenth International World Wide Web Conference*, ACM Press, Hong Kong, May 1-5, 2001, pp.479-488