
Internship/PhD proposal

In Situ, équipe-projet INRIA commune avec le CNRS et l'Université Paris-Sud
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Advisors/Responsables :

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Internship duration/Durée du stage : 5 to 7 months

Title: Adaptive Lenses: Content-aware Focus+Context Visualization

Theme: Human Computer Interaction, Visualization

Requirements: low-level graphics API (OpenGL, shaders): proficient; Geometry: knowledgeable; computer vision: some familiarity welcome (optional)

INTERNSHIP DESCRIPTION

Focus+context interfaces based on the metaphor of lenses provide in-place magnification of a region of the display, smoothly integrating the focus of attention into its surroundings. Two representations of the data exist simultaneously at two different scales, providing an alternative to classical pan & zoom for navigating massive datasets using multi-scale graphical interfaces. See <http://zvtm.sourceforge.net/doc/tutorials/lenses> for various examples.

The geometry and layout of objects to be magnified by lenses can vary greatly. Most frameworks, however, only allow for lenses with a statically-defined size and basic shape that will often be ill-adapted to the graphical configuration of the region of interest. The goal of this internship is to start investigating an area that has remained largely unexplored: the design and implementation of content-aware lenses that dynamically adapt their shape and size to the visual content of the user's focus of interest. The internship will focus on developing and validating an efficient model and OpenGL implementation of lenses that can dynamically adapt themselves based on a restricted set of basic predefined shapes. The follow-up Ph.D will be an opportunity to further investigate the concept of adaptive lenses, with the definition of a model that supports arbitrary shapes, the design of interaction techniques adapted to this new kind of interface, and the development of techniques for automatic and optimal adaptation to visual configurations.

Titre : Adaptive Lenses: Content-aware Focus+Context Visualization

Thématique : Interaction Homme-Machine, Visualisation

Compétences espérées : connaissance d'API graphiques de bas niveau telle que OpenGL, bonnes bases en géométrie, des connaissances en vision par ordinateur sont un plus

DESCRIPTION DU SUJET DE STAGE _____