

NM2: interactive visualization

6700020 / project-based course, semester 2, 6 ects

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course description – iv: interactive visualization

The course description(s) are taken from the accreditation report Creative Technology (version 2.0).

contents The course will address the development of rich media applications using current web-based media technology, with a special focus on animation and interactive visualization(s) of dynamic complex systems. The platform used will be Adobe flex / as3.

Recommended literature: Foundation Actionscript 3.0 Animation: Making Things Move! by Keith Peters

Online reference(s):

- livedocs.adobe.com/flex/3

prerequisites: CA1, CS1, NM1, MA1

goal(s) & attainment target(s) During the course students are expected to learn the skills to create moderately complex media applications.

After following the course, students are expected to have

- awareness of issues in information visualisation
- familiarity with XML-based data and program configuration
- fluency in scripting (actionscript) and the use of flex.
- full literacy in developing simple physics based animations

Students are expected to have an explorative attitude, and will be stimulated in developing aesthetically interesting animations and dynamical visualisations.

place in curriculum: NM2 is meant to be an intermediate course, required for both ST and NM students. The course will enable students to apply their knowledge of dynamic systems and mathematics in a (media-rich) context, as a preparation for more advanced projects in virtual environments and game development. In relation to DE-courses, the focus of NM-courses is primarily on technical issues and programmatic authoring.

application area & motivating example(s) Physics based animation is an effective means of visualizing complex information structures. Effective information visualization moreover depends on intuitive ways of interaction to support exploration. Interactive information visualization is increasingly being used in web 2.0 applications, for giving access to huge amounts of user-contributed data such as blogs and video.

teaching method(s) The course will be organized around lectures in which both technical and conceptual issues, related to animation and visualization, are dealt with. The assignments will consist of a series of basic exercises and a final exercise in which the students are required to develop a moderately complex dynamic web application.

Regular feedback will be given in classroom sessions where students present their work as well as via online comments or email. Grading will be based on basic assignments, the final assignment project with documentation, as well as an essay in which a topic of choice, either technical or in relation to issues of animation and information visualisation, is discussed in more depth.

special facilities: computer lab & presentation facilities, installation of flex 3 SDK.

advice for the student(s)

The *interactive visualization* course provides you the opportunity to apply what you have learned in previous mathematics and programming courses in an integrated way. You may even try to apply what you learn in *dynamic systems* in an application that may primarily be meant to be entertaining. Keep in mind that,

as testified by the use of **physics simulation(s)** in games, that **visual appeal** may well be served by more or less deep **computational/physical principles** and, as you should have learned in the *creative explorations*, **mathematical insight(s)**.

hint(s) for the instructor(s)

The decision on what to take as a **unifying approach** and language in the **computation** part of the curriculum still pending, the safest bet, from many perspectives, seems to take the **visualizing data** book of Ben Fry as a starting point, and dependent on the actual capabilities and skills of the students explore alternative technologies, in particular **flex/as3** for more integrated **interactive visualizations**, involving the essential use of **maps** and **physical animation(s)** in a rich-media context, allowing for the use of **interactive video** in a well-integrated fashion. For the final assignments, the development of **information-centered games** must be encouraged, with an emphasize of **explorative ways** of using data visualization in a game or **entertainment setting**.

afterthought(s)