May 27th: Invited Talk

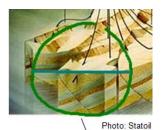## Mario Costa Sousa

Illustrative Modeling: from Concept to Completion

Thu., **2010-05-27**, **14h15**–15h

Store Aud. (room **2144)**, **Høyteknologisenteret (**data blokk, 2nd floor**)**, Thormøhlensgate 55

Photo: Statoil

Abstract:

Sketching is a natural way to communicate ideas quickly. It has been a key component across all stages of product and model development cycle, from initial concept ideas to finished detailed representations. Sketches provide new insights into our understanding of models by facilitating the visual design, analysis and interpretation used to explore and hypothesize various scenarios effectively and efficiently.

In computer modeling, hand-drawn sketches, made at different stages within the model production pipeline (i.e. early prototyping, augmenting), are manually converted into a digital model using current high-end modeling systems, until a finished detailed model is produced. This approach is not cost-effective and has high learning curves to create complex and diverse shapes and intricate inter-relationships. Furthermore, it does not lend to a natural interaction metaphor and forces users to diverge from their preferred ways of thinking and working at different modeling stages.

A recent research direction and area in modeling known as Sketch-Based Interfaces and Modeling (SBIM), or Interactive Illustrative Modeling, can potentially offer intuitive solutions to these problems and to the actual modeling task and goal (i.e. translate hand-drawn sketches to digital models). The main goal of SBIM systems is to allow the creation, manipulation and subsequent annotation of 3D models by using strokes extracted from user input and/or existing drawing scans. Ultimately, the integration of SBIM with current high-end modeling systems would enrich the repertoire of modeling capabilities, allowing users to construct and edit models in a seamless and progressive way from initial concept to a detailed and accurate final model.

This talk surveys the state of SBIM systems and presents recent results and challenges of both fundamental and applied research in SBIM on different domains. Focus will be given to three main topics: (1) overall form, the process of constructing and editing 3D shapes using few, key strokes which define the overall form, geometry, topology, proportions, scale, etc. of the model; (2) shape augmentation, the process of using input strokes to add details (i.e. sharp features, convex and concave regions) to the surfaces of existing 3D shapes; and (3) exploratory marking, the process of using the strokes to indicate, label, and annotate visual references to aid in the overall visual communication, manipulation and exploration of the data