

The Smart Graphics Enterprise

The fifth International Symposium on Smart Graphics will bring together researchers from Computer Graphics, Visualization, Art & Graphics Design, Cognitive Psychology and Artificial Intelligence, all working on different aspects of computer-generated graphics. This year's meeting will be held in the beautifully calm and serene atmosphere of Frauenwörth cloister near Munich, Germany.

Advances and breakthroughs in computer graphics have made visual media the basis of the modern user interface, and it is clear that graphics will play a dominant role in the way people communicate and interact with computers in the future. Indeed, as computers become more and more pervasive, and display sizes both increase and decrease, new and challenging problems arise for the effective use and generation of computer graphics.



Recent advances in computer graphics have allowed AI researchers to integrate graphics in their systems, and on the other hand, many AI techniques have matured to the point of being easily used by non specialists. These very techniques are likely to be the vehicle by which both principles from graphic design, and the results of research into cognitive aspects of visual representations will be integrated in next generation graphical interfaces.

Smart Graphics 2005

This year's symposium will be focused on the question "How can we reconcile Moore's Law with Darwin's Law?". Advancements in information, communication and sensing technologies have made it possible to gather enormous quantities of information about a range of situations and events that are of importance to human survival and prosperity. Artificial intelligence can process much of this information, but understanding and effectively utilizing AI in the context of a task and situation often creates an additional level of complexity for the user. While the amount of information that could potentially inform human decision-making is increasing geometrically, our perceptual and cognitive abilities have remained relatively constant for the last 20,000 years. Since the limiting factor in our ability to utilize information and communication technologies are cognitive in nature, one approach has been to utilize technology to augment human cognition. Beginning with Vannevar Bush's visionary 1945 essay "As We May Think", through JCR Licklider's Man-Machine Symbiosis, and Doug Engelbart's NLS this thread has given rise to the new field of visual analytics.

Visual Analytics describes the art and science of analytical reasoning facilitated by interactive visual interfaces. The goal of Visual Analytics is to stimulate analytical insight from massive, dynamic, ambiguous, and often conflicting information; to detect the expected and to discover the unexpected; and to yield timely assessments with evidence and confidence levels. Visual analytic interfaces are based on cognitive and perceptual principles to support human information discourse using innovative interactive techniques and visual representations. These are augmented by the art of graphical design and interaction design and the use of Artificial Intelligence in partnership with biological intelligence. Testing these applications will require new methodologies that move beyond usability to quantify the impact of interactive visualization applications on perceptual, distributed, and embodied cognition.

Symposium Scope

Smart Graphics is grounded in a deep understanding of human abilities, activities, and desires. This understanding arises through the integration of fields such as art, design, and the social, cognitive, and perceptual sciences. Insights are realized in the form of novel methods for producing and interacting with rich graphical displays often utilizing established techniques from Computer Graphics, Artificial Intelligence, and Computer Science in general. Such interfaces present content that (1) engages the user and is aesthetically satisfying, (2) participates in human cognition as external or distributed representations, (3) is sensitive to the real-time demands of the interaction in the context of the available computational resources and (4) adapts the form of the output according to a wider set of constraints such as an individual's perceptual, attentive, and motor abilities and the nature of the presentation media and available interaction devices. Smart Graphics research can be loosely divided into principles, methods and systems based research, and the symposium will encourage submissions in all these areas, based on the following characterization:

Principles: Characterizing and coping with constraints on technological, computational and human perceptual, cognitive and motor resources; theories of Graphics Design and visual esthetics, theories of graphical representations and interaction; conceptualizations of graphics and interactive systems; representation and reasoning requirements for Smart Graphics; interaction between resource restrictions; design, requirements capture and evaluation methodologies.

Methods: New approaches to the design and testing of graphical generation, presentation and interaction for both conventional desk-top systems and new devices and media; acquisition and representation of design knowledge for Smart Graphics generation; empirical methods in the characterization of interaction; dealing with heterogeneous target media; application of planning, decision theory, optimization, constraint satisfaction, machine learning and other AI techniques to Smart Graphics; attentive systems; evaluation methods.

Systems: The application of Smart Graphics to visualization, virtual reality, augmented reality, mobile communications, wearable computing, graphical hypermedia, novel interaction techniques (e.g. attentive systems, haptic and natural language interaction), and advisory & tutoring systems.

Submission Format

The Proceedings of SG05 will be published by Springer within their Lecture Notes in Computer Science series. Authors will find instructions for the preparation of their papers at Springer's Authors' instructions page. SG05 welcomes submissions from computer graphics, HCI & AI researchers and practitioners, cognitive scientists, graphic designers and other related fields in the following categories:

Full papers: These will be comprehensive descriptions of original research or design work within the scope of the symposium. They are limited to 12 pages in Springer LNCS style.

Posters: These will rather present tentative or preliminary results of research or design work within the scope of the symposium and with more emphasis on the interdisciplinary evaluation of these ideas. Posters will also be included in the proceedings and are limited to 4 pages in Springer LNCS style.

System demonstrations: These will be short descriptions of research or design work that the authors intend to show and discuss in a separate demo session at the symposium. A system description of up to 2 pages in Springer LNCS style will be included in the proceedings.

Venue

The Benedictine abbey of Frauenwörth was founded in the year 772. 130km away from Munich (Germany) and 70km from Salzburg (Austria) it is located on the small island of Frauenchiemsee in the lake Chiemsee. There are merely more than 200 inhabitants living on this island and one third of it is covered by the area of the cloister. The lake is surrounded by a beautiful and natural Bavarian landscape with the Alps on the horizon.



Symposium Committees

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Deadlines

April 24, 2005

May 23, 2005
May 31, 2005

Common submission deadline

Notification of Acceptance
Camera ready copy due

<http://www.smartgraphics.org/sg05/>

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