



Dagstuhl Seminars 2010 relevant for the public



Throughout the year Schloss Dagstuhl invites scientists from all over the world to the northern part of Saarland to discuss the latest research achievements in Information Technology. More than 3.000 IT-specialists from universities, research institutes and business companies participate in international scientific meetings at Dagstuhl every year. Since 2005 Schloss Dagstuhl has been a member of Leibniz Association which is represented by 86 leading non-university research institutes and scientific service-oriented institutions of Germany.

Dagstuhl seminars are organized in a unique way that make them specific ones worldwide. A lot of research topics that are nowadays closely connected with Information Technology, like e.g. Bioinformatics, were discussed for the first time at Schloss Dagstuhl. Furthermore, Schloss Dagstuhl was visited by most prize winners of the A.M. Turing-Award, one of the highest awards in the Information Technology which is as valuable as the Nobel Prize or the Fields Medal, for example. It also shows what estimation the Leibniz Center for Informatics has at the outstanding researchers of Informatics.

In the following some selected Dagstuhl seminars are listed which could be of interest for the general public. It would be our pleasure to help you to establish personal contacts to participating scientists for your investigations and interviews. More information about all seminars in 2010 can be found at <http://www.dagstuhl.de/10>.

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At <http://www.dagstuhl.de/ueber-dagstuhl/presse/pressespiegel/> you will find an overview about our press review.

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21.03.10 – 26.03.10 **Computational Transportation Science**

Organizers: Glenn Geers (NICTA - Kensington, AU), *Monika Sester (Leibniz Universität Hannover, DE)*, Stephan Winter (University of Melbourne, AU), Ouri E. Wolfson (University of Illinois - Chicago, US), Dean Zabrieszach (VicRoads – Kew, AU)

Summary: Computational transportation science combines computer science and engineering with the modeling, planning, and economic aspects of transportation. The discipline goes beyond vehicular technology, and addresses topics such as pedestrian systems on hand-held devices, non-real-time issues such as data mining, and data management issues above the networking layer. Innovative and applied solutions for ride sharing, searching for parking lots, and multi-modal travel planning will be of direct interest for the media and the public. Computational Transportation Science applications will be improved by taking advantage of ubiquitous computing. It is also a driver for paradigm shifts towards decentralized solutions in the transportation management sector. Experts from computer science, geographic information science, intelligent transportation systems, spatial cognition, and researchers from industry come together for a fruitful exchange between a theoretical and an application view on the field.

Details about the seminar at <http://www.dagstuhl.de/10121>

28.03.10 – 01.04.10 **Spatial Representation and Reasoning in Language: Ontologies and Logics of Space**

Organizers: John A. Bateman (Universität Bremen, DE), Anthony G. Cohn (University of Leeds, GB), *James Pustejovsky (Brandeis Univ. Waltham, US)*

Summary: Human languages impose particular linguistic constructions of space, of spatially anchored events, and of spatial configurations that relate in complex ways to the spatial situations in which they are used. Computational linguistics focuses on the study of language from a computational perspective. This dynamic field draws on artificial intelligence, computational and formal logic, linguistic, as well as philosophy, cognitive science, and psychology. In particular, establishing tighter formal specifications of the relationship between linguistic constructions of space and formal models of space has proved a considerable challenge and has so far eluded general solutions. An automatic interpretation, however, is strongly needed to support communication via natural language with the human users of Geographic Information Systems and of context-based services. A further area in which a better understanding of the connection between natural language and formal representations of space is required is the automatic enrichment of textual data with spatial annotations. There is a growing demand for such annotated data, particularly in the context of the semantic web.

Details about the seminar at <http://www.dagstuhl.de/10131>

06.04.10 – 09.04.10 **Distributed Usage Control**

Organizers: Sandro Etalle (TU Eindhoven, NL), *Alexander Pretschner (TU Kaiserslautern, DE)*, Ravi Sandhu (Univ. of Texas at San Antonio, US), Marianne Winslett (University of Illinois - Urbana, US)

Summary: Access control defines who may access which data, and under which circumstances. As an extension to access control, usage control is about defining and enforcing how data may or may not be handled after it has been accessed. Examples for such tasks are "do not disseminate," "delete after thirty days," "notify me when accessed," "use only for scientific purposes." Usage control is a key feature in the area of privacy, protection of trade secrets or intellectual property, digital rights management,

and auditing/compliance in the context of regulatory frameworks. It is hence both relevant for society and economics and treated in many projects e.g. about e-Government. Usage control is obviously particularly challenging in distributed settings where the data server cannot control or inspect the client's activities.

Details about the seminar at <http://www.dagstuhl.de/10141>

13.06.10 – 18.06.10 **Information Visualization**

Organizers: *Andreas Kerren* (Växjö University, SE), Catherine Plaisant (University of Maryland - College Park, US), John T. Stasko (Georgia Institute of Technology, US)

Summary: Information Visualization focuses on the use of visualization techniques to help people understand and analyze data. While related fields such as scientific visualization involve the presentation of data that has some physical or geometric correspondence, information visualization centers on abstract information without such correspondences. Examples of such abstract data are symbolic, tabular, networked, hierarchical, or textual information sources. The ever-increasing amount of data generated or made available every day confirms the urgent need of appropriate tools. As prerequisite for building a successful visualization, Information Visualization combines several aspects of different research areas, such as (scientific) visualization, human-computer interaction, data mining, information design, cognitive psychology, cartography, graph drawing, or computer graphics. Applications involve beside others ambient technologies that help people take advantage of information to enrich their lives.

This seminar is held in parallel to the event *Workshop Wissenschaftsjournalismus "Schreiben und sprechen über Informatik"* (<http://www.dagstuhl.de/10242>). The aim of this workshop is to motivate and instruct young journalists to report on abstract and complex issues of computer science.

Details about the seminar at <http://www.dagstuhl.de/10241>

Details about predecessor seminar at <http://www.dagstuhl.de/07221>

11.07.10 – 16.07.10 **Dynamically Reconfigurable Architectures**

Organizers: Peter M. Athanas (Virginia Polytechnic Institute - Blacksburg, US), *Jürgen Becker* (Universität Karlsruhe, DE), Jürgen Teich (Universität Erlangen-Nürnberg, DE), Ingrid Verbauwhede (K.U. Leuven, BE)

Summary: Reconfigurable computing is a computing paradigm combining some of the flexibility of software with the high performance of hardware. Technological advances opens up new ways of implementing complex systems in a way that blurs the barriers between hardware and software component development. Furthermore, new advances in optical communication lead to feasible implementations of interconnection structures, which are no longer theoretical only. Reconfigurable architectures are an important and fundamental field of research that is supported in many projects and has applications in many key technologies like automotive technologies, telecommunication, mobile systems and sensor technologies.

Details about the seminar at <http://www.dagstuhl.de/10281>

Details about predecessor seminar at <http://www.dagstuhl.de/06141>

18.07.10 – 23.07.10 **Automation in Digital Preservation**

Organizers: Jean-Pierre Chanod (Xerox Research Center Europe - Grenoble, FR), *Milena Dobрева* (Bulgarian Academy, BG & The Univ. of Strathclyde, GB), Andreas Rauber (TU Wien, AT), Seamus Ross (University of Toronto, CA)

Summary: Digital preservation is an issue that affects every single citizen in the information society. It covers a whole spectrum of issues, from the long-term access to and use of personal digital objects, to the complex area of information objects' lifecycle management in big institutions from the engineering, governmental, research and cultural heritage sectors. E-government, e-science and e-culture hugely depend on proper storage and access to huge collections of digital resources, which should not be affected by the changes in the technological environment. Metadata, which stores information about preservation, is one method to support automated approaches for preservation. They have to be extracted and inserted automatically or at least semi-automatically, due to the limitations introduced otherwise by the human factor. Together with other approaches this should contribute to achieve in the future a set of fully deployed digital preservation services, which will be one of the long-term added values of this particular seminar.

Details about the seminar at <http://www.dagstuhl.de/10291>

22.08.10 – 26.08.10 **Insider Threats: Strategies for Prevention, Mitigation, and Response**

Organizers: Lizzie Coles-Kemp (RHUL - London, GB), Dieter Gollmann (TU Hamburg-Harburg, DE), Jeffrey Hunker (Carnegie Mellon University - Pittsburgh, US), *Christian W. Probst* (Technical University of Denmark, DK)

Summary: The “insider threat” or “insider problem” has received considerable attention, and is cited as the most serious security problem in many studies. It is also considered the most difficult problem to deal with, because an “insider” has information and capabilities not known to other, external attackers. A genuine problem related to insider threats is that (in the academic world) the traditional focus of security is to keep attackers out—by definition this does not work against insiders. However, the term “insider threat” is usually either not defined at all, or defined nebulously. Core issues of considering insider threats are to define who is an insider, what constitutes an insider threat, and what, at a high level, are some of the basic challenges in adopting technical versus human factor approaches to preventing, detecting, and mitigating threats. Dealing with the special risk by insider threats is in particular important for government- and financial security.

Details about the seminar at <http://www.dagstuhl.de/10341>

Details about predecessor seminar at <http://www.dagstuhl.de/08302>

13.09.10 – 17.09.10 **Demarcating User eXperience**

Organizers: *Virpi Roto* (Nokia Research Center, FI), Effie Law (University of Leicester, UK), Arnold Vermeeren (Delft University of Technology, NL), Jettie Hoonhout (Philips Research, NL)

Summary: The fields of Human Factors and Human-Computer Interaction have traditionally focused on the productivity of work systems. Usability has been a central concept in these fields, but its standard definition emphasizes efficiency and effectiveness on the same level as user's satisfaction. With consumer products, it is often less relevant to focus in productivity of users, but we need to shift the attention to the experiential aspects of interaction such as fun, creativity, trust, identification,

stimulation, or pleasure. User experience is about user delight, whereas traditional usability is commonly interpreted as easy and efficient use.

When considering user experience from a broader perspective than effectiveness and efficiency alone, the research fields of design, social psychology, cognitive psychology, and marketing become relevant. It is important to learn from these fields, as these disciplines have executed a good deal of research on what users value, how to affect people's emotions, what people's expectations for products are, how they understand user interfaces, and what their cognitive capabilities in different contexts of use are.

Details about the seminar at <http://www.dagstuhl.de/10373>

10.10.10 – 15.10.10 **Computational Video**

Organizers: Daniel Cremers (Universität Bonn, DE), *Marcus A. Magnor (TU Braunschweig, DE)*, Wojciech Matusik (Adobe Systems – Newton, US), Lihi Zelnik-Manor (Technion – Haifa, IL)

Summary: Advancements in computer vision, video communications, and computer graphics are coming together to revolutionize the way movies, television casts, and home videos will be produced, edited, and viewed 10 years from now. Already nowadays computational video methods are enabling high-dynamic range movies and displays as well as modern stereoscopic movies. Examples of prospective research topics in computational video include free viewpoint navigation, advanced video editing, real-time motion capture and tracking, special effects editing, or live and realistic video augmentation. Since the challenges to be addressed are both theoretical and practical in nature, the seminar brings together experts from different computer science and engineering disciplines, from academia and industry.

Details about the seminar at <http://www.dagstuhl.de/10411>

17.10.10 – 22.10.10 **Model-Based Testing in Practice**

Organizers: *Wolfgang Grieskamp (Microsoft Corp. – Redmond, US)*, Robert Hierons (Brunel University, GB), Alexander Pretschner (TU Kaiserslautern, DE)

Summary: The key idea of model-based testing is the usage of a model for a system for testing the system itself. Model-Based testing has matured as a rich research area in the last decade, with a significant body of research and applications. Tools for model-based testing have been developed both as research prototypes and as commercial or semi-commercial applications. They are used by midsize and enterprise-level companies and applied in large-scale projects. In the family of model-driven approaches, model-based testing can be seen as a success story in particular with respect to the degree of mechanical processing and automation and the adoption in practice. The successful deployment of model-based testing in industrial settings can be seen in the telecommunication domain, chip cards, operating system protocols, and embedded systems in general.

Details about the seminar at <http://www.dagstuhl.de/10421>

24.10.10 – 29.10.10 **Software Engineering for Self-Adaptive Systems**

Organizers: Rogerio de Lemos (University of Kent, GB), *Holger Giese (Hasso-Plattner-Institut – Potsdam, DE)*, Hausi Müller (University of Victoria, CA), Mary Shaw (Carnegie Mellon University – Pittsburgh, US)

Summary: The simultaneous explosion of information and integration of technology

together with the continuous evolution from software intensive systems to systems of systems and to ultra-large-scale systems requires new and innovative approaches for building, running and managing software systems. A consequence of this continuous evolution is that software systems are expected to become more versatile, flexible, resilient, dependable, robust, continuously available, energy-efficient, recoverable, customizable, self-healing, configurable, or self-optimizing by adapting to changing requirements and contexts/environments. One of the most promising approaches to achieve such properties is to equip software systems with self-managing capabilities using self-adaptation mechanisms.

Building self-adaptive software systems cost-effectively and in a systematic and predictable manner is a major engineering challenge—even though self-adaptive systems have had a long history with huge success in many different branches of engineering. However, the proper realization of the self-adaptation functionality remains a formidable intellectual challenge. In the long run, we need to establish the foundations that enable the systematic development of future generations of self-adaptive systems. Therefore the current achievements have to be integrated into a more comprehensive overall research effort from which generic approaches should be devised.

Details about the seminar at <http://www.dagstuhl.de/10431>

Details about predecessor seminar at <http://www.dagstuhl.de/08031>

14.11.10 – 19.11.10 **Schematization in Cartography, Visualization, and Computational Geometry**

Organizers: Jason Dykes (City University – London, GB), Matthias Müller-Hannemann (Martin-Luther-Universität Halle-Wittenberg, DE), *Alexander Wolff (Universität Würzburg, DE)*

Summary: In this seminar, we are interested in computing the layout of complex networks under angular restrictions. We refer to this problem as angular schematization and subsume under it also the combined effort of network construction and layout. It is striking that edge directions are being restricted in networks of very different nature and that these networks are constructed in very different communities: graph drawing, information visualization, geographic information systems, very-large-scale-integrated circuit layout, and underground mining. In some of these communities, rectilinear connections have a long history, but recently octilinear connections – connections in 8 directions, each 45° – have moved into the spotlight, bringing with them completely new problems and challenges. In other fields of application such as underground mining, it is not the number of slopes that is restricted, but there is an upper bound on the maximum slope.

Details about the seminar at <http://www.dagstuhl.de/10461>

05.12.10 – 10.12.10 Representation, Analysis and Visualization of Moving Objects

Organizers: Jörg-Rüdiger Sack (Carleton University – Ottawa, CA), Bettina Speckmann (TU Eindhoven, NL), Emiel Van Loon (University of Amsterdam, NL), *Robert Weibel (Universität Zürich, CH)*

Summary: Technologies for object tracking have recently become affordable and reliable and hence movement records are nowadays generated in huge volumes on a routine basis, using diverse technologies such as radio telemetry, GPS, analysis of video sequences, Doppler radar, or infrared eye tracking. Despite this plethora of readily available tracking data, methods for extracting useful information are still immature, due

to fragmentation of research and lack of comprehensiveness from mono-disciplinary approaches. This information is essential to substantiate decision making in public and private sectors, in application domains such as fleet management, transportation modeling, urban planning, tourism, wildlife ecology, spatial epidemiology, location-based services, flight safety, and marine safety.

Details about the seminar at <http://www.dagstuhl.de/10491>

Details about predecessor seminar at <http://www.dagstuhl.de/08451>