

Psychoinformatics.

Psychology Meets Informatics

University of Siegen, July 21-26, 2015



Tuesday, July 21, 2015:

9.00-9.30, **Opening and Welcome**

9.30-11.00 and 11.30-13.00, *11.00-11.30 Coffee Break*

Symposium 1: “Breaking the Mold: How Psychoinformatics and Digital Media Change Psychological Research”

Participants: Tal Yarkoni (University of Texas), Michael Hanke (Magdeburg University), Christian Battista (Stanford University), Constantin Rothkopf (Darmstadt Technical University); Angela Schorr (Siegen University, Chair)

The participants are asked to give an opinion on the following questions: What is psychoinformatics? How can we define this new approach? Where does psychoinformatics become important in psychology? Are there parallel developments and how are they related to psychoinformatics? Where do I position myself? How do the developments summed up here by the label “psychoinformatics” give direction to the future of psychology as a science?

Due to different travelling schedules, the discussion on psychoinformatics starts on Tuesday with four of our invited guests (Symposium 1). On Thursday afternoon the discussion will be further inspired and summed up by contributions from Marc Erich Latoschik, Christian Montag, and Kristopher Blom (Symposium 2). They are joined by participants from Symposium 1.

Tal Yarkoni (University of Texas): New horizons at the interface of psychology and the computing sciences

Psychoinformatics is an emerging discipline that uses tools and techniques from the computer and information sciences to improve the acquisition, organization, and synthesis of psychological data. In this talk, I review recent developments in the field. I focus on several areas where the application of informatics approaches has already paid large dividends, including novel data collection approaches; adaptation of computational techniques and insights; aggregation and organization of psychological data; large-scale data mining and synthesis; and improving research and publication practices. I argue that in the coming years, informatics approaches are likely to play the same instrumental role in shaping psychological research that they have already played in other fields such as genetics and neuroscience.

Michael Hanke (Magdeburg University): Psychoinformatics: Digital literacy for psychological science

The information wealth of the digital age is inaccessible for a psychologist with standard training. It is no longer sufficient to just know your way around spread-sheets and some statistical tests. The psychology curriculum must be amended with basic training on computer programming and digital information retrieval that enables psychologists to exploit new sources of information.

Christian Battista (Stanford University): It all started with the storm in a teapot known as #repligate ...

I am a postdoctoral fellow in the Stanford Cognitive and Systems Neuroscience lab. My primary area of research is how children acquire the ability to perform complex cognitive skills such as mathematics. Being a lover of all things electronic from an early age, I am an avid proponent of improving mathematical and technological fluency among researchers and society as a whole. Last year I made a ripple or two in the twittersphere with a previous post lamenting the lack of rigour in the psychological sciences. The post itself was inspired by the storm in the teapot known as #repligate, but it got me thinking about broader issues.

Constantin Rothkopf (Darmstadt Technical University): Computational cognition and cognitive computation

Computational models can be used to model systems as a black box but they can also be used to inform information processing models that aim at understanding human cognition. We will present examples of this classic dichotomy and show the persistent reciprocal influence even though both machine learning and cognitive science are progressively maturing fields.

13.00-14.00, Lunch

14.00-16.00 and 16.30-18.00, *16.00-16.30 Coffee Break*

18.30: Reception - Major of the City of Siegen at Rathaus Siegen, Markstrasse 2 (& Dinner)

Tuesday Afternoon Session

Session 1: “Exemplary Research Programs in Psychoinformatics and Cognate Disciplines I”

Presenters: All participants of the Symposium 1 will present their individual research programs.
Chair: Angela Schorr

Michael Hanke (Magdeburg University): Studying real-life cognition together with all of you

Everyday cognition involves a large variety of concurrent neural processes that handle an incredible amount of sensory inputs in order to generate appropriate responses when interacting with the environment. It can be argued that studying any of these aspects of cognition in isolation, as it is often the case in feature-deprived laboratory experiments, yields an over-simplified or over-specialized understanding of the true nature of brain function. In order to fully understand “how the brain works”, it is essential to study the complex inter-play of cognitive processes in a rich natural environment and go beyond the localization of individual aspects of brain function. I will outline a strategy to approach this herculean task that is based on the core principles of open-science and aims to enable collaboration between research groups and disciplines.

Constantin Rothkopf (Darmstadt Technical University): Understanding extended sequential visuomotor behavior through computational approaches

Understanding naturalistic, every day, sequential behavior is arguably a central goal of both psychology and cognitive science, but it is still a hard problem for many reasons, including computational complexities as well as difficulties of experimental control. We present different approaches that use behavioral and computational methods in very different ways to make progress towards this goal.

Christian Battista (Stanford University): The development of the neural system supporting complex cognitive skills

I will review work from the Numerical Cognition Lab and the Stanford Cognitive and Systems Neuroscience Lab to discuss cases in which synergies between method and theory are helping to resolve recurring conceptual problems in the field of educational neuroscience. I will discuss the drawbacks of my field's approach to parietal function, which interprets intraparietal sulcus activity as indicative of quantity processing and angular gyrus activity as indicative of arithmetic fact retrieval via the semantic memory system (Dehaene et al., 2003). Using results from longitudinal studies of child development and adaptive, web-based training studies in adults, I will provide evidence that changes to the neural systems that accompany improvements in arithmetic proficiency extend beyond the parietal system. Furthermore, developmental changes within the parietal system can be shown to relate to changes in cognitive skills beyond quantity representation, quantity manipulation, and semantic memory. Finally, I will discuss how tools such as Neurosynth (Yarkoni et al., 2011) and the Cognitive Atlas (Poldrack et al., 2011) have the potential to prevent topic myopia by allowing researchers to put their own tasks and results into the context of the intimidatingly large sea of neurocognitive data.

Tal Yarkoni (University of Texas): Data mining for fun and non-profit. What we do in the UT-Austin Psychoinformatics Lab

In this talk, I provide an overview of my program of research in the UT-Austin Psychoinformatics Lab. I discuss the motivation for our work, review several areas of current research in the lab, and briefly describe the tools and techniques we rely on. I focus particular attention on our work developing informatics platforms for large-scale analysis of neuroimaging data, such as the Neurosynth framework.

Wednesday, July 22, 2015:

9.00 -11.00 and 11.30-12.30; *11.00-11.30 Coffee Break*

Wednesday Morning Session

Session 2: “Key Technical Concepts and Best Scientific Computing Practices in Psychoinformatics” (Chair: Tal Yarkoni)

Tal Yarkoni (University of Texas): Better scientific living through better scientific computing

To conduct cutting-edge science efficiently and effectively, psychologists are increasingly dependent on technical computing skills that are rarely taught in our graduate training programs. In this talk, I discuss how best practices in scientific computing - e.g., version control, workflow automation, and automated testing - can dramatically improve the quality and sometimes quantity of researchers' output. I review ways in which researchers can acquire such skills on their own time, as well as steps graduate programs can take to ensure that their students remain on the cutting edge of psychological science in an increasingly competitive field and job market.

Michael Hanke (Magdeburg University): Share your tools, but fear the WOMBAT

Scientific software development (analysis scripts, applications) typically follows an endless cycle: Enthusiastic start, hacked-up first draft, organic growth, slow death, and repeat (with a new PhD student). - There are many reasons why this is the case. However, I claim that it is possible to break out of this cycle. I will present four simple rules that will help you create tools that last.

Kristopher Blom (Virtual Human Technologies): The Virtual Human: The ideal confederate

Virtual Reality provides the ability to experiment in situ for most any situation, while remaining in a controlled laboratory. Virtual Humans (Avatars) extend that power to social settings, providing controlled, consistent, financially scalable, and untiring performances.

Angela Schorr (Siegen University): Silent Change. Introducing virtual and augmented reality tools to basic and applied research in psychology

Nowadays, it is quite easy to simulate experimental conditions by using virtual and augmented reality tools in psychological research. An awful lot of new research based on virtual and augmented reality is published. Nevertheless, a majority of researchers in psychology's basic and applied disciplines are hesitant to use these tools. Their skepticism is not only due to convenient hardware and software tools that are difficult to find. The validity of these measurements is still doubtful. The fast dissemination of the new VR and AR tools in people's daily entertainment reinforces the doubts. Strategies to validate the new tools - especially those using augmented reality (AR) - and to combine the new research with traditional procedures have to be developed.

12.30 – 13.00 Postersession: Introduction, Poster Presentation & Discussion (Posters exhibited all the afternoon!)

(Chair: Lara Fritsche)

Clemens Stachl [1], Jakob Kaiser [1], Sarah Huber [1], Johannes Albert-von der Gönna [1], Alexander De Luca [2], Daniel Buschek [2], Markus Bühner [1] Psychology Department [1], Media Informatics Group [2], Ludwig-Maximilians-Universität München, Munich, Germany
Exploring the Relationship of Smartphone App Usage and Narrow Personality Facets

This work is part of a larger research project at LMU München, investigating the relationship of personality traits, intelligence, and smartphone usage as well as behavioral proxy measures. For data acquisition, 102 participants completed the computer-based Big Five Personality Inventory (BFSI) and had an app installed on their personal smartphone logging anonymous usage data for a period of 60 days. In contrast to previous research this work focuses on app use and its relationship to personality on factor and facet level (Extraversion and Openness). Significant relationships were found for Assertiveness with the use of social apps and for Openness to Aesthetics with the use of photography and video apps. Additional correlations indicate considerable relationships between other Big Five personality facets and smartphone usage. In summary, this work reports on the capability of app-usage measures as predictors of personality and thus highlights the emerging potential of smartphones as a research tool in the social sciences. However, results also suggest complex relationships between personality and behavior. Specific results as well as challenges in relation to behavior logging on smartphones are discussed. Further research is needed in order to cross-validate discovered results.

Kilian Semmelmann, Katharina Sommer, Marisa Nordt & Sarah Weigelt, Ruhr-Universität Bochum

New technologies in developmental psychology

Two studies are presented, the study „FACETOUCH – playing games at kindergarten“ (children, age 2-5 years) and the study “TOLbam – webcam-based research at home“. The first study explores the development of visual memory as one of the key areas in cognitive psychology by using a gamified, simple-to-use tablet for the children to play with. The second study (babies, age 2-12 months) presents a low-cost online environment to do research with babies (TOLcam: the online lab - baby cam).

13.00-14.00 Lunch

14.00-16.00 and 16.30-19.00, 16.00-16.30 *Coffee Break*

Wednesday Afternoon Session

Session 3: “Contributions of Psychoinformatics to Basic and Applied Research in Psychology and vice versa” (Chair: Christian Battista)

Tal Yarkoni (University of Texas): The informatics revolution in personality psychology

The study of individual differences has a long history in psychology, but the profile of personality psychology has arguably diminished in recent decades - in part due to the difficulty involved in studying very large samples of people. With the advent of modern technology, personality psychologists now have the ability to study individual differences in more ecologically valid ways at an unprecedented scale. I review a number of recent developments and studies that have changed the landscape of personality psychology, including work predicting personality from language use and social media behavior; individual differences in patterns of behavioral data acquired via mobile sensing technologies; and large-scale efforts to map out the structure of symptoms in personality psychopathology.

Christian Montag & Alexander Markowetz (Ulm/Bonn University): Predicting personality from smartphone behavior. Empirical evidence for psychoinformatics

In the present talk empirical studies will be presented on the link between smartphone behavior and personality traits. In a pilot study with a small number of users ($n = 49$), a classic personality inventory called NEO-FFI was investigated in the context of classic call and short message service variables. Here, in particular extraversion turned out to be of relevance. In a second study, smartphone behavior was tracked on a large scale level in $N = 2418$ participants. One focus of the study was the Whatsapp usage. Here, links between Whatsapp usage and personality traits could be established again. The talk will also give an outlook on how methods from Psychoinformatics can help to reduce smartphone overusage. Excessive smartphone usage will also be discussed in the context of analogue timer usage such as an alarm clock in the bedroom. Finally, the field of PsychoNeuroInformatics will be introduced.

Angela Schorr (Siegen University): New venues to basic research on emotions

Experience sampling research methods (ESM) enable us to learn about individuals' lives in context by measuring feelings, thoughts, actions, activities as they go about their daily lives. Due to the new mobility of digital media data collection procedures using experience sampling methods not only become easier to apply. In fact, long-standing problems of psychological emotion research now become solvable. Especially our research on cognition-emotion processes (see "appraisal theories") can be freed from circular theorizing due to more precise measurement provided that the psychological short scales used are optimized and more variables are included.

Stefan Lüttke (Tübingen University): Emotion and social cognition research in clinical psychology: A call for more sophisticated research tools like VR

Emotion and social cognition research play a key role in the understanding of the development and psychopathology in mental disorders like depression and schizophrenia. Interestingly, despite the existence of more advanced research tools like VR results in the field of clinical psychology mainly rely on rather ecologically invalid methods like static facial emotion expressions (FEE). Since FEE or even schematic faces do not resemble the way human beings experience the world it might be difficult to draw valid conclusions about patient's experience and behavior using those rather simple stimuli. Therefore, new research tools to study emotion recognition and social cognition are highly desired.

Christian Battista (Stanford University): Turning problems into solutions. The use of smart device screen time as a reward for children's good behavior

The widespread use of smartphones and tablets is a challenge for parents. On the one hand, these devices are highly desirable to children and have the potential to positively affect motivation, focus and learning (West, 2013). On the other hand, their use encourages sedentary behavior and can be very distracting in educational contexts (Tindell & Bohlander, 2012). The challenge of balancing frequent use of smart devices with potential positive effects presents an opportunity to use smartphones as a behavior modification system for children. In this talk, research on a novel behavior modification ecosystem called *eCarrot* will be discussed (<http://eCarrot.it>). *eCarrot*, which functions on Android and iOS, restricts smart device use by running as a system-level process, intercepting any other applications that may be running on the system, locking the screen until certain goals are met. Flagship applications in this ecosystem are education (math training) and health (exercise and fitness) related - where children earn device use by completing arithmetic problems or by walking and running (answering a math problem correctly earns five seconds of screen time; five steps earns five seconds of screen time). Pre-post testing indicates that this reward system is effective in motivating children, but the system also provides valuable metrics beyond improvements on the practiced task. Because the child determines the point at which they can redeem their time reward, their ability to delay gratification (Mischel et al., 1972) can be quantified. Not surprisingly, children exhibit variability in their self-determined reward schedule. In this talk, improvements on delay gratification as a result of *eCarrot* use, and the relationship between children's intrinsic delay gratification and learning rates will be discussed.

Claudia Schrader (Ulm University): LiverDefense. Using a tower defense game as assessment tool for players' trends in emotions

A study is presented that investigates how the interaction between game difficulty and players' perception of control interacts with and influences the trends of emotions during playing *LiverDefense* – an educational tower defense game illustrating the basic functions of the human liver. This game has not only been used to convey knowledge about the human liver but also as it illustrates an easy to-use assessment tool since it can be customized with regard to its degree of difficulty in order to induce diverse emotional states such as pleasure, frustration, boredom or anger. Further, LiverDefense allows adding and displaying Likert scale questionnaires that enabled to track players' actual perception of control and actual emotions during game play interactivity. All customization can be done via human-readable XML files, abolishing the need for programming proficiency. 120 students participated in this study; they were randomly assigned to one of three game-versions (i.e., easy, moderate, difficult). First, one-way repeated measures ANOVA's confirms the successful manipulation of difficulty according to players' perception of control. Second, a significant interaction between trends of each of the emotions and difficulty conditions is observed, indicating that the emotional state between the three rounds students had to play differed between the game conditions. Further, confirmatory analyses using cross-lagged model reveals a significant relationship between perceived control and trends of emotions.

Thursday, July 23, 2015

9.00 -11.00 and 11.30-13.00; *11.00-11.30 Coffee Break*

Thursday Morning Session

Session 4: "Exemplary Research Programs in Psychoinformatics and Cognate Disciplines II"

Participants of the Symposium 2 will present their individual research programs. Chair: Claudia Schrader

Kristopher Blom (Virtual Human Technologies): Applying perception to virtual problems

Virtual Reality (and myself) developed out of highly technical disciplines. However, VR problems are not all solvable by technical solutions. VR differs itself from the current and previous generation computer games by its perceptual issues. As such, perceptual approaches are necessary.

Marc Erich Latoschik (Würzburg University): Perceptual, multimodal, intelligent – HCI@the University of Würzburg

This talk presents the profile of the Human-Computer Interaction (HCI) group of the University of Würzburg. The group explores novel human-computer interaction methods based on perceptual computing, multimodal interfaces, intelligent graphics, and real-time interactive systems. An interdisciplinary approach combines Computer Graphics, Artificial Intelligence, and Cognitive Sciences to create Virtual, Augmented and Mixed Realities as interfaces of future human-computer systems.

E.S.H. Tan, Sennay Ghebreab, Juliette van Haren (University of Amsterdam): Computer vision and machine learning can help us understand film viewer genre recognition and emotion

Film viewers have tacit knowledge of film genres that help them to select, comprehend and appreciate movies. Higher perceptual, cognitive and emotional processing is involved in recognizing genres, but some low-level cues also are effective. We demonstrate how computer vision algorithms can help to identify such low-level processing image features predictive of genre recognition. Implications for large scale multi-modal analyses and methodological problems of manifold levels of description are discussed.

13.00-14.00 Lunch

14.00-16.00, 16.00-16.30 *Coffee Break*

Thursday Afternoon Session & Symposium 2

Session 5: “Exemplary Curricula/Degree Courses Combining (Content from) Psychology and Information Science” (Chair: Angela Schorr)

Marc Erich Latoschik (Wuerzburg University): Human-computer systems and interaction – combining computers and humans in Wuerzburg

The University of Wuerzburg runs the bachelor program human-computer systems and the master program human-computer interaction. We will illustrate main aspects of the structure and concepts of both programs and its organization inside of the University between two faculties and three institutes. Insight into successful approaches will be accompanied by a critical analysis of pitfalls. Some ideas on future programs will complement the talk.

Michael Hanke (Magdeburg University): Education and research at the intersection of psychology, neurobiology, and computer science in Magdeburg

I will give a brief report about the status quo of interdisciplinary research and curricula at the University of Magdeburg and its associated research centers in Magdeburg.

Christian Battista (Stanford University): Hard and soft skills. Proposal for a model curriculum for psychoinformatics in psychology

In this talk, I will present a model undergraduate curriculum for psychoinformatics based on my own experiences in the academic system, as well as the experiences of the research assistants and students I have mentored. The goal of this curriculum is to produce graduates who are capable of becoming members productive of academic or industrial research communities. It should foster curiosity and an appreciation for the scientific method, but this balanced with enough hands-on experience to provide students the opportunity to hone the craft of software design. Additional foci will provide historical, social and market perspective such that students understand the forces that drive the research funding landscape where they are expected to thrive. Provocative questions for discussion include 1) Should such a degree should be used as a filter for discovering prodigious researchers (many Data Science programs in Silicon Valley seem to exist for this purpose) or as a program that elevates the abilities of all its students? 2) By what means can top technological talent be

diverted away from the booming tech economy and into research? 3) Should such a curriculum be considered complementary to a traditional Psychology degree, or is it an alternative? 4) How can psychoinformatics be applied inward, so that the degree program becomes self-improving?

Coffee Break 16.00-16.30; after that 16.30-19.00:

Symposium 2: “Summing-Up and Re-Evaluating the Discussion on Psychoinformatics from Tuesday”

Participants: Marc Erich Latoschik (Würzburg University), Christian Montag (Bonn University), and Kristopher Blom (Virtual Human Technologies) will join the group of experts (Chair: Michael Hanke)

Marc Erich Latoschik (Würzburg University): Breaking the Mold II. Combining methods from psychology and computer science

I will investigate the effects and potential of a combination of psychological and computer science methods and concepts. What effect do methods from psychology have on the engineering aspects of computer systems? We will answer questions on when and how these methods can and should be applied mutually, either during the various steps in building real computer systems or during the design of technologically enhanced studies and experiments.

Christian Montag (Ulm University): Psychoinformatics will revolutionize psychodiagnostics

Currently psychology relies mostly on self-report and interview techniques to get insights into the state/trait of a person. By applying methods from informatics in psychology, it will be possible to get insights into psychological variables by studying human-machine interaction.

Kristopher Blom (Virtual Human Technologies): Virtual Human seeks Psychologist

Virtual Human seeks Psychologist for validation. Has a deep, unfulfilled need to help others. Has trouble being accepted by psychologists, but not with general public. Seeks direction and partnership in forging new paths.

Followed by:

Discussion on: “Cooperation basics: Interdisciplinary research with computer scientists, medical doctors, game developers, etc. (Discussants: Christian Battista, Michael Hanke, Alexander Markowetz)

Friday, July 24, 2015

9.00 -10.30; 10.30-11.00 *Coffee Break*

Early Morning Session

Morning Talk on Curricula/Appointments Combining Psychology and Information Science

(Chair: Angela Schorr)

Constantin Rothkopf (Darmstadt Technical University): The “Psychology in IT”- B.Sc. and M.Sc. programs at Darmstadt Technical University

We will present the core ideas of these two programs and how they are currently evolving.

Alexander Markowetz (Bonn University): Six years of experience with life science informatics

In a very innovative way, we collect and analyze Big Data in a mental health context. Observing the user 24/7 without requiring any of his attention returns data of a totally new quantity and quality. Approaches such as this one are about to revolutionise both psychology and psychiatry. This talk is on our health analytics research and our results, but also on the snares of carrying out projects like this as assistant professor (“Juniorprofessor”) in an information science department.

11.00-13.00; *Lunch Break: 13.00-13.30*

Two Parallel Friday Morning Sessions

Session 6: “New and Usable Software Tools for Psychological Research and Practice”

Chair: Michael Hanke

Michael Hanke (Magdeburg University): Scientific computing with NeuroDebian

Cognitive scientists and computers are not necessarily the best friends. Maintaining a computing environment is a hassle that is complicated, takes too long, is never rewarded, and nobody wants to pay for it. But it doesn't have to be like this. I will present *NeuroDebian* - a free, open, and universally available turnkey platform for (neuro)science research computing - and show how anyone can start using a modern, computing environment within minutes, and maintain it for as long as necessary with minimal effort. I will also give a brief overview on readily available software for cognitive science research.

Daniel Gall (Ulm University): Translation of ACT-R models to constraint handling rules

ACT-R is a popular cognitive architecture. Although its psychological theory is well-investigated, it lacks a formal foundation. This inhibits computational analysis of cognitive models and leads to technical artifacts in ACT-R implementations. On the other hand, Constraint Handling Rules (CHR) is a declarative programming language from the field of logic programming

with many theoretical analysis results and tools. We present an adaptable implementation of ACT-R using CHR. This translation enables the definition of an operational semantics for ACT-R. The application of analytical methods from the CHR ecosystem paves the way for ACT-R model analysis. Due to the power of logic programming we are able to easily exchange fundamental parts of ACT-R allowing to test and compare different theories in one system.

Kristopher Blom (Virtual Human Technologies): The Virtual Human: Where we are in the pixel to people spectrum

For information science, avatars are usually just pixels. For psychologists, they are more like people. In this talk, I will discuss the current state of avatar technologies in that spectrum and the challenges that still exist in creating and using virtual humans. The focus will be on the perceptual and application side of the topic rather than technical side.

11.00-13.00; *Lunch Break: 13.00-13.30*

Session 7: “Applied Psychoinformatics I: Contributions of Psychoinformatics to Health Care and More”

Chair: Angela Schorr

Lara Fritsche (Siegen University): Health apps and more – psychoinformatics in health care research

During the last years, the increasing use of smartphones has opened new ways in gaining information about healthy living and improving health care. Health apps are able to measure a large quantity of different physical and psychological data and transfer (user-specific) health information to users for medical or rather therapeutical purpose at any time. This presentation will point out how far health apps base on fundamentals of health psychology. Which health apps do already exist? Do they operate on a scientific basis? How should those apps be designed to be attractive to potential users? These issues are going to be related to different health subjects, for example physical activity or diet. Furthermore, we will have a look at recently created fitness trackers like jawbone® and fitbit®. Those wearables record physiological data day and night. By exchanging data, users get to motivate each other in order to achieve top performances. Concluding, there will be an overview of the state of the art of health apps and examples of fitness trackers.

Marc Erich Latoschik (Würzburg University): Unreal, Unity, or Simulator X? Tools for perceptual computing

Several conceptual and technological approaches for highly interactive immersive systems in Virtual, Augmented and Mixed Reality (VR, AR & MR) exist. They all have specific benefits but also very specific difficulties and challenges. Recently, game-related software tools like Unity or the Unreal engine gained a lot of interest due to their easy availability and often smooth learning curve. Hence, they are widely used in several research programs. The talk will introduce the benefits of these systems but will pinpoint their shortcomings. We will introduce a typical alternative from the academic field and discuss its advantages and its potential for improvement.

Marc Erich Latoschik (Würzburg University): From the pit to the body to the mind

Perceptual computing focusses on the effect of artificial sensory stimuli on the human mind and behavior. This talk will introduce examples for the effectiveness of current approaches and will highlight ongoing perceptual computing research projects of the HCI group at Würzburg. We will first investigate the Unreal Pit, a modern adaptation of the classical virtual pit and several offsprings from this idea. This will be complemented by work on different aspects of embodiment of one's digital self, e.g., targeting physical fitness training.

Friday Afternoon Session

13.30-17.30; 15.00-15.30 *Coffee Break*

Session 8: "Applied Psychoinformatics II: Contributions of Psychoinformatics to Education" (in German; Chair: Lara Fritsche)

Angela Schorr (Siegen University): Immer noch ein weites Feld. Digitale Medien in deutschen Schulen („Still too far afield. Digital media in German schools“)

Auf der Basis einer repräsentativen Befragung von N=412 Lehrerinnen und Lehrern an 187 Schulen aller Schulformen in NRW wird ein „digitales Nutzungsprofil“ des Einsatzes digitaler Medien im Unterricht und in der Organisation von Schulen je Schulform erstellt. Auch die Bedenken in Bezug auf diesen Medieneinsatz werden untersucht und im Rahmen einer Kosten-Nutzen-Analyse bewertet. Im Zentrum der Präsentation stehen Vorschläge zum sinnvollen Einsatz digitaler Medien auf der Basis der mitgeteilten Erfahrungswerte erfahrener Lehrender, sowie Vorschläge zu sinnvollen und wirklich inspirierenden Digitalen Medientrainings für Schule und Unterricht.

Marc Erich Latoschik (Würzburg University): Das Semantic Media Backend – ein Verwaltungssystem für semantisch annotierte multimediale (Lehr-)Inhalte („The semantic media backend – managing multimedia teaching“)

Multiple different media are used today in education. This includes images, videos, audio files and of course plain text documents. These sources come in several layouts depending on the later usage pattern, e.g., used in a presentation or as a handout or as a web resource. This talk will introduce a management system to organize, develop, and build multimedia teaching materials. The system is built on top of a semantic database to describe its content and to foster composition and reuse.

Friedhelm Meier (Bochum University): AQS – Qualitätsmanagement für Forschung, Lehre und Verwaltung („The AQS – a data management software for research, teaching and administration“)

Das wissenschaftliche Datenmanagement in Forschung, Lehre und Verwaltung für Projekte, Seminare, Prüfungen, Bibliotheken usw. erfordert die dynamische Entwicklung und Bereitstellung von online Befragungs- und Erhebungsverfahren, Dokumentenablage und Datenstrukturen. Zwischen der Datenhaltung des Endanwenders mit spontan-chaotischen Excel-Anwendungen und den qualifizierten komplexen Datenbanksystemanwendungen für Unternehmen besteht nicht nur eine große Kostendynamik, sondern auch eine erhebliche Aufwandsdynamik administrativer Aufgaben. Hier wird das AQS in der Version 12.8 vorgestellt, dass mit dem Ziel der Aufwands- und

Kostenreduktion entwickelt wurde. Das AQS ist ein inhaltstolerantes Datenbanksystem, das den spontanen Spreadsheet- sowie Office- und Statistikanwendungen ein ‚backend‘ bietet und das als web-basierte ‚Cloud‘ an Arbeitsplätzen und mobilen Geräten ubiquitär eingesetzt werden kann und eine schnelle projekt- und auftragsbezogene Implementation von Informationsstrukturen in mandantenfähigen bzw. disjunkten Projekten ermöglicht. Hervorzuheben ist die einfache Datendistribution mittels modernster ReST-Services.

Ulrike Starker, Peter Kuntner & Lisa-Marie Kuich (University of Applied Sciences Harz): Die App „Schulalltag“, ein Trainingstool für die Lehramtsausbildung („*The School Routine App – a practical tool for teacher training*“)

Diese App wurde eigens dafür entwickelt, den Umgang mit den komplexen Herausforderungen des Schulalltags zu trainieren und richtet sich in erster Linie an Studierende des Lehramts. Aktuell wird sie bereits an der Universität Mainz in der Lehre eingesetzt. Die App „Schulalltag“ ist ein computergestütztes Trainingsprogramm, das das Verhalten von Schülern während einer Unterrichtsstunde simuliert, während derer es Aufgabe des Spielenden ist, in die Rolle des Lehrenden zu schlüpfen und den Schülerinnen und Schülern Lernstrategien zu vermitteln. Nach einer kurzen Einführung gebunden an die Aufgabenstellung besteht die Möglichkeit, vor dem Spielstart fachliches Wissen über Lernstrategien einzuholen. Der zeitliche Rahmen eines Spieldurchlaufs umfasst reale 45 Minuten. Am Ende des Spiels besteht die Option, nochmals einen Blick auf alle Schüler zu werfen und sich ihre Entwicklung im Laufe der Schulstunde genauer anzusehen.

Digitale Medientrainings für (angehende) Lehrerinnen und Lehrer

André Bertels & Sascha Gorovoj & Lara Fritsche

Im Programm zu dieser Tagung bieten wir auch Digitale Medientrainings für (angehende) Lehrerinnen und Lehrer und alle Interessierten am Samstag/Sonntag (25.-26.07.2015, Zwei-Tage-Programm) an, die laufend evaluiert werden. Anmeldung für diese Kurse wird erbeten unter dem Stichwort „*Psychoinformatics/Medientraining/25/26*“.

Interactive Whiteboard & Digital Media Training Courses

will be held on Saturday/Sunday (July, 25-26, 2015; two-day course). They are scheduled for 9.00 – 13.00 and 14.00-17.00 (coffee break at 11.00; 16.00; lunch: 13.00-14.00) and will be held in German. Please enroll for these courses using the password “*Psychoinformatics/Medientraining/25/26*”.How

How you find us:

The whole conference will be held at the University of Siegen, Hoelderlinstrasse 3, 57076 Siegen. It takes place in Building H (for Hoelderlinstrasse) on the ground level (Level 3), Hallway C. It is easy to find (same level and close to the entrance of the building). Also, there will be signboards everywhere. Close to the building is a parking area which will be opened for you (follow the signposts from Am Eichenhang!). The busses C 111 and C 106 directly stop at the Station Hoelderlinstrasse.

Organisatorisches: Ort und Anfahrt

Die gesamte Tagung findet an der **Universität Siegen, Hölderlinstraße 3, 57076 Siegen** statt. Im gleichnamigen **Gebäude H für Hölderlinstraße** finden die Veranstaltungen im Erdgeschoss (= Ebene 3) in den Räumen von Gang C statt – es wird alles ausgeschildert sein und ist leicht zu finden!

Am Gebäude Hölderlinstraße wird der zugehörige Parkplatz freigehalten; vom Bahnhof Siegen aus und von verschiedenen anderen Haltestellen in der Stadt gehen regelmäßig Busse (Linie C 111 and C 106) direkt zur Universität. Zum reservierten Parkplatz am Tagungsgebäude muss man von der Hauptstraße Am Eichenhang abbiegen – wir werden die Strecke ausschildern. Die Haltestelle Hölderlinstraße befindet sich unmittelbar vor dem Eingang zum Gebäude.