

Bringing Design To Software (ACM Press)

This book provides an introduction to program specification, illustrating the advantages it confers upon the software development process. Covering all three major specification languages (Larch, VDM, and Z), the book discusses specification in general, the abstraction process, the mathematical tools required, and the main formal methods.

This volume contains the papers presented at the third biennial Information Systems Foundations ('Theory, Representation and Reality') Workshop, held at The Australian National University in Canberra from 27-28 September 2006. The focus of the workshop was, as for the others in the series, the foundations of Information Systems as an academic discipline. The particular emphasis was, as in past workshops, the adequacy and completeness of theoretical underpinnings and the research methods employed. At the same time the practical nature of the applications and phenomena with which the discipline deals were kept firmly in view. Accordingly, the papers in this volume range from the unashamedly theoretical in their focus (Designing for Mutability in Information Systems Artifacts; Towards a Unified Theory of Fit: Task, Technology and Individual) to the much more practically oriented (An Action-Centred Approach to Conceptualising Information Support for Routine Work).

Bringing Design to Software Addison-Wesley Professional

Software engineering requires specialized knowledge of a broad spectrum of topics, including the construction of software and the platforms, applications, and environments in which the software operates as well as an understanding of the people who build and use the software. Offering an authoritative perspective, the two volumes of the Encyclopedia of Software Engineering cover the entire multidisciplinary scope of this important field. More than 200 expert contributors and reviewers from industry and academia across 21 countries provide easy-to-read entries that cover software requirements, design, construction, testing, maintenance, configuration management, quality control, and software engineering management tools and methods. Editor Phillip A. Laplante uses the most universally recognized definition of the areas of relevance to software engineering, the Software Engineering Body of Knowledge (SWEBOK®), as a template for organizing the material. Also available in an electronic format, this encyclopedia supplies software engineering students, IT professionals, researchers, managers, and scholars with unrivaled coverage of the topics that encompass this ever-changing field. Also Available Online

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Proceedings of the 1st International Workshop on Bringing Architectural Design Thinking Into Developers' Daily Activities
Specification of Software Systems
Theory, Representation and Reality
Interactive Systems. Design, Specification, and Verification
Bringing Design to Software
The New Economy in East Asia and the Pacific
Great Principles of Computing

With exclusive coverage of the latest findings of the HPI-Stanford Design Thinking Research program, this latest volume of the annual series affords readers deeper insights into the prerequisites of real innovation and the underlying processes at work.

Computer science as an engineering discipline has been spectacularly successful. Yet it is also a philosophical enterprise in the way it represents the world and creates and manipulates models of reality, people, and action. In this book, Paul Dourish addresses the philosophical bases of human-computer interaction. He looks at how what he calls "embodied interaction"—an approach to interacting with software systems that emphasizes skilled, engaged practice rather than disembodied rationality—reflects the phenomenological approaches of Martin Heidegger, Ludwig Wittgenstein, and other twentieth-century philosophers. The phenomenological tradition emphasizes the primacy of natural practice over abstract cognition in everyday activity. Dourish shows how this perspective can shed light on the foundational underpinnings of current research on embodied interaction. He looks in particular at how tangible and social approaches to interaction are related, how they can be used to analyze and understand embodied interaction, and how they could affect the design of future interactive systems. Organizational Semiotics occupies an important niche in the research community of human communication and information systems. It opens up new ways of understanding the functioning of information and information resources in organised behaviour. In recent years, a number of workshops and conferences have provided researchers and practitioners opportunities to discuss

their theories, methods and practices and to assess the benefits and potential of this approach. Literature in this field is much in demand but still difficult to find, so we are pleased to offer a third volume in the miniseries of Studies in Organizational Semiotics. This book is based on the papers and discussions of the fifth workshop on Organizational Semiotics held in Delft, June 13–15, 2002, hosted by Groningen University and Delft Technical University in the Netherlands. The topic of this workshop was the dynamics and change in organizations. The chapters in this book reflect recent developments in theory and applications and demonstrate the significance of Organizational Semiotics to information systems, human communication and coordination, organizational analysis and modelling. In particular, it provides a framework that accommodates both the technical and social aspects of information systems. The miniseries presents the frontier of the research in this area and shows how the theory and techniques enhance the quality of work on information systems.

This book constitutes the refereed post-proceedings of the 12th International Workshop on Design, Specification, and Verification of Interactive Systems, DSV-IS 2005. The 20 revised full papers, 1 keynote paper, and 4 summaries of group discussions are organized in topical sections on teams and groups, sketches and templates, away from the desktop, migration and mobility, analysis tools, model-based design processes and tools, and group discussions.

13th International Conference, ICEC 2014, Sydney, Australia, October 1–3, 2014, Proceedings

Studying Co-Creation in Practice

Design Research in Information Systems

Entertainment Computing - ICEC 2014

Design Thinking Research

Through the Systems Development Life-Cycle

15th International Conference, HCI International 2013, Las Vegas, NV, USA, July 21–26, 2013, Proceedings, Part I

Services and products are increasingly composed of interconnected computerized things with embedded sensors and interaction capabilities. This trend is evident also in everyday objects and tools and is rapidly changing the way we live our lives. Design work and designers have to keep up with this development and adapt both thinking and tools. The problem is no longer just to design a physical object or interact with a single computational device and design is not even limited to the service embedding the device. Design needs to include all of the above while, importantly, also taking the particular context of use into account. This book presents a framework and a number of tools from a systems

perspective that will help the designer take the step from designing a thing or a web site to designing a context aware pervasive service. As a first basis for this, three complementary interactors; Human, Information and Thing, along with the interactions they enable are introduced. This basis is used to infuse a way of thinking on pervasive services that is reapplied also to groups and joint ventures. Services are thoroughly introduced in the book along with their support, ranging from networked infrastructure for communication to cognitive by artificial intelligence. The design process is introduced by a discussion on the goals for design. Usability, value based design and meaningful user experiences are surveyed as guides for better designs. Beginning with the resultant understanding, the design process is staged using the levels of service design, requirement analysis, concept, information, interaction, and appearance design. Relevant tools and an outline of the possible design space of mobile and pervasive applications are given for each level, and the design work is framed by an overall story-based approach. In total the book consists of 658 pages, 112 figures and 218 illustrations. Both text and ideas have improved from the third edition. One year Weiser. Håkan Gulliksson is a lecturer on Interaction technology and Mobile design at Umeå University Sweden. He has been the coordinator for the Master of Science program in Interaction and Design for more than ten years. Demonstrating the influence of Semiotic Engineering in Human-Computer Interaction, this book focuses on the work of one of the pioneers of the field - Clarisse de Souza - and her influence on this broad and wide-ranging area of research. It contains a selection of essays written by those that have worked with her over the years and will encourage readers to extend their reading and research in this area. Clarisse de Souza, widely known as the founder of Semiotic Engineering, will reach her 60th birthday in 2017, and the Semiotic Engineering Research Group that she founded will also celebrate its 20th anniversary. A key figure in HCI, Clarisse argued that human-computer interaction enables computer-mediated communication between the designer and the user at the point of interaction thus enabling and facilitating designers in understanding who their users are, and what their requirements may be. This book brings together prominent researchers who have helped to shape semiotic engineering by their insightful discussions on the theory.

This book presents the SigniFYI Suite of conceptual and methodological tools, designed to uncover meanings inscribed in software, their origins, intent and consequences to identify and trace correlating patterns; from software design and development to software use and experience. Based on the study of Semiotic Engineering, the book advances the e study of Human-Centered

Computing (HCC), inviting professionals, researchers, teachers and students to reflect upon how subjective and cultural values manifest themselves through software models, programs and user interfaces. The authors weave a mesh of technical, theoretical and philosophical considerations of what it means to build and use software, exploring what we (professionals and non-professionals) mean by the pieces of software we design and develop, as well as what pieces of software mean to end-users and others. Explicitly dedicated to software designers, developers and users, Software Developers as Users is a provocative view of socio-technical communication in the digital age.

A new framework for understanding computing: a coherent set of principles spanning technologies, domains, algorithms, architectures, and designs. Computing is usually viewed as a technology field that advances at the breakneck speed of Moore's Law. If we turn away even for a moment, we might miss a game-changing technological breakthrough or an earthshaking theoretical development. This book takes a different perspective, presenting computing as a science governed by fundamental principles that span all technologies. Computer science is a science of information processes. We need a new language to describe the science, and in this book Peter Denning and Craig Martell offer the great principles framework as just such a language. This is a book about the whole of computing—its algorithms, architectures, and designs. Denning and Martell divide the great principles of computing into six categories: communication, computation, coordination, recollection, evaluation, and design. They begin with an introduction to computing, its history, its many interactions with other fields, its domains of practice, and the structure of the great principles framework. They go on to examine the great principles in different areas: information, machines, programming, computation, memory, parallelism, queueing, and design. Finally, they apply the great principles to networking, the Internet in particular. Great Principles of Computing will be essential reading for professionals in science and engineering fields with a “computational” branch, for practitioners in computing who want overviews of less familiar areas of computer science, and for non-computer science majors who want an accessible entry way to the field.

Thoughtful Interaction Design

The SAGE Handbook of Digital Technology Research

Social Thinking--software Practice

The Entity-Life Modeling Approach

2nd Edition

4th Edition

Software Developers as Users

This book sets out the problems of measuring the effects of technological

change on economic progress by using the internet in the Asia-Pacific region as a case study. Corporate and industry experience, including changing business organization and new regulatory issues are explored as well as policy issues such as the digital divide and the approach to e-commerce in the WTO. Using several industry case studies the contributors compare the IT experience in North America with a number of countries in Asia and the Pacific.

Real-Life Distance Education: Case Studies in Practice documents and discusses the experiences of those who have implemented distance learning as a solution to "real-life" problems and provides guidance to assist readers in their understanding and analysis of distance learning. This approach allows readers to develop analytic and problem solving skills. The variety of different situations within the individual case studies allows readers to apply their knowledge to new and unique situations and to explore solutions to complex issues. The book is useful as a primary or supplementary text in programs of educational technology, instructional design, learning sciences, human resource development, curriculum & instruction, media & technology or higher education.

It is 5 years since the publication of the seminal paper on "Design Science in Information Systems Research" by Hevner, March, Park, and Ram in MIS Quarterly and the initiation of the Information Technology and Systems department of the Communications of AIS. These events in 2004 are markers in the move of design science to the forefront of information systems research. A sufficient interval has elapsed since then to allow assessment of from where the field has come and where it should go. Design science research and behavioral science research started as dual tracks when IS was a young field. By the 1990s, the influx of behavioral scientists started to dominate the number of design scientists and the field moved in that direction. By the early 2000s, design people were having difficulty publishing in mainline IS journals and in being tenured in many universities. Yes, an annual Workshop on Information Technology and Systems (WITS) was established in 1991 in conjunction with the International Conference on Information Systems (ICIS) and grew each year. But that was the extent of design science recognition. Fortunately, a revival is underway. By 2009, when this foreword was written, the fourth DESRIST conference has been held and plans are afoot for the 2010 meeting. Design scientists regained respect and recognition in many venues where they previously had little.

Winner of a 2013 CHOICE Outstanding Academic Title Award The third edition of a groundbreaking reference, The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications raises the bar for handbooks in this field. It is the largest, most complete compilation of HCI theories, principles, advances, case st

From Web to Workplace

Interactive Systems. Design Specification, and Verification

Designing Interactions

Semiotic Investigations in Human-Centered Software Development

Handbook of Research on Serious Games as Educational, Business and Research Tools

The Foundations of Embodied Interaction

10th International Workshop, DSV-IS 2003, Funchal, Madeira Island, Portugal, June 11-13, 2003, Revised Papers

Computer programs and processes that take into account the goals and needs of the user meet with the greatest success, so it behooves software engineers to consider the human element inherent in every line of code they write. Human Factors in Software Development and Design brings together high quality research on the influence and impact of ordinary people on the software industry. With the goal of improving the quality and usability of computer technologies, this premier reference is intended for students and practitioners of software engineering as well as researchers, educators, and interested laymen.

Extending the scenario method beyond interface design, this important book shows developers how to design more effective systems by soliciting, analyzing, and elaborating stories from end-users Contributions from leading industry consultants and opinion-makers present a range of scenario techniques, from the light, sketchy, and agile to the careful and systematic Includes real-world case studies from Philips, DaimlerChrysler, and Nokia, and covers systems ranging from custom software to embedded hardware-software systems

"Rogers, Preece and Sharp are a bestselling author team, acknowledged leaders and educators in their field, with a strong global reputation. They bring depth of scope to the subject, encompassing the latest technologies and devices including facebook and YouTube. Interaction Design offers a cross-disciplinary, practical and process-oriented approach to Human Computer Interaction, showing not just what principals ought to apply to Interaction Design, but crucially how they can be applied. Motivating examples are included to illustrate technical, social, and ethical issues, making the book approachable and adaptable for both Computer Science and non-Computer Science users. Interviews with key HCI luminaries are included and provide an insight into current and future trends. The text comes with a lively and highly interactive companion web site containing a rich set of resources enabling students to collaborate on experiments and designs, take part in competitions, find resources and communicate with others"--

"This book presents research on the most recent technological developments in all fields of knowledge or disciplines of computer games development, including planning, design, development, marketing, business management, users and behavior"--Provided by publisher.

12th International Workshop, DSVIS 2005, Newcastle upon Tyne, UK, July 13-15, 2005, Revised Papers

Teaching and Learning Design

Conversations Around Semiotic Engineering

15th International Conference, PROFES 2014, Helsinki, Finland, December

10-12, 2014, Proceedings
Designing User Experience
Beyond Human - Computer Interaction
Interaction Design

Forty designers who have helped shaped human interaction with technology are introduced in a collection of stories that charts the history of entrepreneurial design development for technology.

"This book introduces a new professional in the context of the information science, technology, and management called an 'heuristic assessor of qualitative communicability in interactive systems'"--Provided by publisher.

A software design manifesto; Design of the conceptual model; The role of the artist-designer; Design languages; The consumer spectrum; Action - centered design; Keeping it simple; The designer's stance; Reflective conversation with materials; Cultures of prototyping; Footholds for design; Design as practiced; Organizational support for software design; Design for people at work; Reflection; Bibliography; Name index; Subject index.

This book assumes familiarity with threads (in a language such as Ada, C#, or Java) and introduces the entity-life modeling (ELM) design approach for certain kinds of multithreaded software. ELM focuses on "reactive systems," which continuously interact with the problem environment. These "reactive systems" include embedded systems, as well as such interactive systems as cruise controllers and automated teller machines. Part I covers two fundamentals: program-language thread support and state diagramming. These are necessary for understanding ELM and are provided primarily for reference. Part II covers ELM from different angles. Part III positions ELM relative to other design approaches.

Human Factors in Software Development and Design

Fundamentals, Evolving Technologies, and Emerging Applications, Third Edition

Theory and Practice

Design of Multithreaded Software

Re:Research, Volume 1

Designing Open Hypermedia Systems

Dynamics and Change in Organizations

This book constitutes the thoroughly refereed post-proceedings of the 10th International Workshop on Design, Specification, and Verification of Interactive Systems, DSV-IS 2003, held in Funchal, Madeira Island, Portugal, in June 2003. The 26 revised full papers and 5 revised short papers presented together with an invited paper have passed through two rounds of reviewing, selection, and improvement. The papers are organized in topical sections on test and evaluation, Web and groupware, tools and technologies, task modeling, model-based design, mobile and multiple devices, UML, and specification languages.

If you look around you will find that all computer systems, from your portable devices to the strongest supercomputers, are heterogeneous in nature. The most obvious heterogeneity is the existence of computing nodes of different capabilities (e.g. multicore, GPUs, FPGAs, ...). But there are also other heterogeneity factors that exist in computing systems, like the memory system components, interconnection, etc. The main reason for these different types of heterogeneity is to have good performance with power efficiency. Heterogeneous computing results in both challenges and opportunities. This book discusses both. It shows that we need to deal with these challenges at all levels of the computing stack: from algorithms all the way to process technology. We discuss the topic of heterogeneous computing from different angles: hardware challenges, current hardware state-of-the-art, software issues, how to make the best use of the current heterogeneous systems, and what lies ahead. The aim of this book is to introduce the big picture of heterogeneous computing. Whether you are a hardware designer or a software developer, you need to know how the pieces of the puzzle fit together. The main goal is to bring researchers and engineers to the forefront of the research frontier in the new era that started a few years ago and is expected to continue for decades. We believe that academics, researchers, practitioners, and students will benefit from this book and will be prepared to tackle the big wave of heterogeneous computing that is here to stay.

This book constitutes the refereed proceedings of the 13th International Conference on Entertainment Computing, ICEC 2014, held in Sydney, Australia, in October 2013. The 20 full papers, 6 short papers and 8 posters presented were carefully reviewed and selected from 62 submissions. In addition to these papers, the program featured 3 demonstration papers, and 2 workshops. The papers cover various aspects of entertainment computing including authoring, development, use and evaluation of digital entertainment artefacts and processes.

Creativity and design creativity in particular are being recognized as playing an increasing role in the social and economic wellbeing of a society. As a consequence creativity is becoming a focus of research. However, much of this burgeoning research is distributed across multiple disciplines that normally do not intersect with each other and researchers in one discipline are often unaware of related research in another discipline. This volume brings together contributions from design science, computer science, cognitive science and neuroscience on studying visual and spatial reasoning applicable to design creativity. The book is the result of a unique NSF-funded workshop held in Aix-en-Provence, France. The aim of the workshop and the resulting volume was to allow researchers in disparate disciplines to be exposed to the other's research, research methods and research results within the context of design creativity. Fifteen of the papers presented and discussed at the workshop are contained in this volume. The contributors come from Germany, Israel, Netherlands, Poland, Singapore, UK and USA, indicating the international spread of the research presented in this volume.

Studies in Organizational Semiotics

Pervasive Computing Design for Sustainability

Encyclopedia of Library and Information Sciences
A Design Perspective on Information Technology
Human Computer Interaction Handbook
Digital Library Usability Studies

The authors of *Thoughtful Interaction Design* go beyond the usual technical concerns of usability and usefulness to consider interaction design from a design perspective. The shaping of digital artifacts is a design process that influences the form and functions of workplaces, schools, communication, and culture; the successful interaction designer must use both ethical and aesthetic judgment to create designs that are appropriate to a given environment. This book is not a how-to manual, but a collection of tools for thought about interaction design. Working with information technology—called by the authors "the material without qualities"—interaction designers create not a static object but a dynamic pattern of interactivity. The design vision is closely linked to context and not simply focused on the technology. The authors' action-oriented and context-dependent design theory, drawing on design theorist Donald Schön's concept of the reflective practitioner, helps designers deal with complex design challenges created by new technology and new knowledge. Their approach, based on a foundation of thoughtfulness that acknowledges the designer's responsibility not only for the functional qualities of the design product but for the ethical and aesthetic qualities as well, fills the need for a theory of interaction design that can increase and nurture design knowledge. From this perspective they address the fundamental question of what kind of knowledge an aspiring designer needs, discussing the process of design, the designer, design methods and techniques, the design product and its qualities, and conditions for interaction design.

Each summer, circulation staff in my library inventories a section of the stacks and brings collection issues to the attention of appropriate bibliographers. Since I am responsible for the economics collection, I see an array of government documents that have managed to elude the cataloging process. Many of these titles are decades old, having squatted in the library undisturbed and uncirculated since our online catalog was implemented in 1990.

This book constitutes the refereed proceedings of the 15th International Conference on Product-Focused Software Process Improvement, PROFES 2014, held in Helsinki, Finland, in December 2014. The 18 revised full papers presented together with 14 short papers were carefully reviewed and selected from 45 initial submissions. The papers are organized in topical sections on agile development, decision-making, development practices and issues, product planning, and project management.

This book contains the knowledge an interaction designer should know about pervasive design for sustainability. Relevant design research is discussed and framed in a story and value based participatory approach. Sustainability is the most important design goal. This is

the first message. A second message is that information technologies, and in particular pervasive computing are invaluable keys in the quest for sustainability. Thirdly there is a lack of knowledge on sustainability issues in the interaction design community. In this book a unique meta-level framework structures an extensive discussion of design for sustainability. The framework is based on a principle of justice that is complemented by circumstances for sustainability chosen from the perspective of interaction design. We suggest and present the following circumstances: limited shared resources, socio-technical components and structures, technology development, vision and reflection, cognitive and behavioural support, joint ventures and political action. Topics discussed within the circumstances include experience design, ethics, Latours's modes of existence, design fiction, computer games, futures studies, theories for reflection and behavioural change, personal informatics, and practice theory. The convolute concludes with a number of case studies where interaction design research is summarized and studied from the perspective of sustainability. We start out with thoughts on sustainable consumption, sustainable character, and the sustainable family that gets a section each. Adding to them are annotated case studies from research on design fiction, game and performance, value based design, practice theory, multi-level perspective design and design for a sustainable society. The book is a polyphonic convolute which means that there will be some overlap in the reports from the different discourses. Development in the areas related to interaction design can be sensed by identifying the surfacing themes. In total the e-book consists of the equivalence of 530 pages excluding references and index. Håkan Gulliksson is a lecturer on Interaction technology and Sustainable design at Umeå University for more than ten years.

Organizing and Learning Through Gaming and Simulation

Studying Visual and Spatial Reasoning for Design Creativity

Case Studies in Practice

Quality and Communicability for Interactive Hypermedia Systems:

Concepts and Practices for Design

Human-Computer Interaction: Human-Centred Design Approaches, Methods, Tools and Environments

Product-Focused Software Process Improvement

Encyclopedia of Software Engineering Three-Volume Set (Print)

ust as the term design has been going through change, growth and expansion of meaning, and interpretation in practice and education – the same can be said for design research. The traditional boundaries of design are dissolving and connections are being established with other fields at an exponential rate. Based on the proceedings from the 2017 International Association of Societies of Design Research conference, Re:Research is an edited collection that showcases a curated selection of 83 papers – just over half of the works presented at the conference. With topics ranging from the introduction of design in the primary education sector to designing information for

Artificial Intelligence systems, this book collection demonstrates the diverse perspectives of design and design research. Divided into seven thematic volumes, this collection maps out where the field of design research is now. Opening a Design Education Pipeline from University to K-12 and Back • Peter Scupelli, Doris Wells-Papanek, Judy Brooks, Arnold Wasserman To prepare students to imagine desirable futures amidst current planetary-level challenges, design educators must think and act in new ways. In this paper, we describe a pilot study that illustrates how educators might teach K-12 students and university design students to situate their making within transitional times in a volatile and exponentially changing world. We describe how to best situate students to align design thinking and learning with future foresight. Here we present a pilot test and evaluate how a university-level Design Futures course content, approach, and scaffolded instructional materials – can be adapted for use in K-12 Design Learning Challenges. We describe the K-12 design-based learning challenges/experiences developed and implemented by the Design Learning Network (DLN). The Design Futures course we describe in this paper is a required course for third-year undergraduate students in the School of Design at Carnegie Mellon University. The “x” signifies a different type of design that aligns short-term action with long-term goals. The course integrates design thinking and learning with long-horizon future scenario foresight. Broadly speaking, we ask how might portions of a design course be taught and experienced by teachers and students of two different demographics: within the university (Design Undergraduates) and in K-12 (via DLN). This pilot study is descriptive in nature; in future work, we seek to assess learning outcomes across university and K-12 courses. We believe the approach described is relevant for lifelong learners (e.g., post-graduate-level, career development, transitional adult education). Re-Clarifying Design Problems Through Questions for Secondary School Children: An Example Based on Design Problem Identification in Singapore Pre-Tertiary Design Education • Wei Leong, Leon Loh, Hwee Mui, Grace Kwek, Wei Leong Lee It is believed that secondary school students often define design problems in the design coursework superficially due to various reasons such as lack of exposure, inexperience and the lack of research skills. Questioning techniques have long been associated with the development of critical thinking. Based on this context and assumption, the current study aimed to explore the use of questioning techniques to enable pre-tertiary students to improve their understanding of design problems by using questions to critique their thinking and decision-making

processes and in turn, generate more effective design solutions. A qualitative approach is adopted in this study to identify the trajectories of students during design problem identification and clarification process. Using student design journals as a form of record for action and thoughts, they are analyzed and supplemented by hearing survey with the teacher-in-charge. From the study, the following points can be concluded: (1) questions can be a useful tool to facilitate a better understanding of the design problem. (2) The process of identification and clarification of design problem is important in the development of critical thinking skills and social-emotional skills of the students. (3) It is important that students are given time and opportunity to find out the problems by themselves. (4) Teachers can be important role models as students may pick up questioning techniques from teacher-student discussions. (5) Departmental reviews and built-in professional development time for weekly reviews on teaching and learning strategies are necessary for the continual improvement D&T education.

Surveying Stakeholders: Research Informing Design Curriculum • Andrea Quam

Fundamental to design education is the creation and structure of curriculum. Neither the creation of design curriculum, nor the reevaluation of existing curriculum is well documented. With no clear documentation of precedent, best practices are left open to debate. This paper and presentation will discuss the use of a survey as a research tool to assess existing curriculum at Iowa State University in the United States. This tool allowed the needs and perspectives of the program's diverse stakeholders to be better understood. Utilizing survey methods, research revealed the convergence and divergence of stakeholders' philosophies, theories and needs in relation to design curriculum. Accreditation and professional licensing provide base level of guidelines for design curriculum in the United States. However, each program's curricular structure beyond these guidelines is a complicated balance of resources, facilities, faculty and the type of institution in which it is housed. Once established, a program's curriculum is rarely reassessed as a whole, but instead updated with the hasty addition of classes upon an existing curricular structure. Curriculum is infrequently re-addressed, and when it is, it is typically based on the experience and opinions of a select group of faculty. This paper presents how a survey was developed to collect data to inform curricular decision-making, enabling the reduction of faculty bias and speculation in the process. Lessons learned from the development of this research tool will be shared so it might be replicated at other institutions, and be efficiently repeated periodically to ensure currency of a

program's curriculum. New Challenges when Teaching UX Students to Sketch and Prototype • Joep Frens, Jodi Forlizzi, John Zimmerman In this paper we report on new challenges when teaching User Experience (UX) students how to sketch and prototype their designs. We argue that UX students sketch and prototype differently than other design students, and we discuss how changes in the field necessitate a response in education. We describe sketching and prototyping as a continuum that students successfully traverse when they follow a process of "double loop learning." We highlight three new challenges: (1) New computational design materials, (2) new maker tools and (3) changes within the tech industry. We explore these three challenges through examples from our students, and we outline strategies for sketching and prototyping in this new reality. We conclude that this is a starting point for further work on keeping education up to speed with practice.

How to Teach Industrial Design?: A Case Study of College Education for Design Beginners • Joomyung Rhi Industrial design education has existed for a long time as part of the university system, but the curriculum and contents of each subject vary considerably from school to school. In recent years, the introduction of new concepts that change the definition of design has blurred the boundaries of design, making the curriculum different. Establishing a standard curriculum to address these challenges is an important task, but it is necessary to fully understand how design education actually takes place and to share content with educators. This paper aims to contribute to the debate on industrial design education by fully disclosing the process and results of the first stage of industrial design education of a university by autobiographical method. The first course, Product Design Practice 1, is a studio class based on a task feedback iteration system. Students are required to submit assignments showing weekly progress. The instructor reviewed the assignments submitted before the class and gave written comments in class. In addition, details of the design process and method that are difficult to identify as novice students are learned through twelve case studies and applied to the project. This Task Feedback Repeating Class system gives students the opportunity to implement design ability while gaining detailed skills with a comprehensive view. Through this process, the researcher got a reflection on the class and implications for the improvement of the class.

Preliminary Study on the Learning Pressure of Undergraduate Industrial Design Students - Wenzhi Chen Learning pressure affects students' learning process and performance. Industrial design education emphasizes that operations on real design problems that have heavy working loads may cause learning

pressure. The purpose of this study is to explore the issues causing learning pressure and the pressure management strategies of undergraduate industrial design students. There were 297 students who participated in the questionnaire survey. The main findings are as follows: First, learning pressure includes academic pressure, peer pressure, self-expectations, time pressure, financial pressure, pressure from instructors, external pressure, future career, pressure from parents, resource pressure, achievement and situational pressure. In addition, the main learning pressure is caused by finance, time, resources, external issues and future career. Second, the pressure management strategies include problem solving, procrastination and escape, help seeking, leisure, emotional management and self-adjustment. The most useful strategy for managing pressure is leisure, and procrastination and escape is the least useful strategy. Third, all learning pressures are significantly correlated with procrastination and escape strategy, but the coefficients are low. The results can be a reference for industrial design education and related research.

Rewarding Risk: Exploring How to Encourage Learning that Comes from Taking Risks • Dennis Cheatham High-stakes testing that became the norm after the "No Child Left Behind Act" of 2001 helped condition students to strive for correct answers for clear problems, all on the first try. However, the iterative process inherent in designing requires risk-taking to conduct a trial-and-error process of defining problems and exploring possible solutions. This design research project was operated with Miami University Graphic Design students to test their willingness to take risks in their coursework to achieve their self-defined measures of success. Students identified that improving their skills was how they defined success. An interaction design assignment involving front-end coding was modified to test students' comfort taking risks to grow their skills. Most students took risks in the assignment to grow their interaction design skills. The project revealed that closer attention to student motivation when developing learning experiences could help students make the transition to practicing design as an iterative process fraught with risk.

An Analysis of the Educational Value of PBL Design Workshops • Ikjoon Chang, Suhong Hwang The purpose of this study is to plan and operate design-workshops based on project-based learning (PBL), and examine their educational value for students. The PBL workshop encourages direct participation from students and produces educational value, and it is important to raise the interest level of workshops to elicit proactive participation. The workshop in this study was carried out over 2 weeks in

January 2017 at Korea's Yonsei University. The workshop was composed of eight teams of students from three countries, including Korea, China and Japan, and the course was primarily divided into two sessions. The workshop participants examined in this thesis were notably satisfied with the elements of the course meant to garner interest. In the questionnaire results, participants also indicated that they obtained ample educational value through the workshop. An important element of the workshop was to connect the participants with businesses, which is also an important component of design education. Despite this, participants expressed a relatively lower level of satisfaction compared to other elements of the workshop. The results and analysis of this study will hopefully become a meaningful resource for educators when designing workshops in the future.

Collaborative Design Education with Industry: Student

Perspective by Reflection - Nathan Kotlarewski, Louise Wallis,

Michael Lee, Gregory Nolan, Megan Last This study suggests that

student reflection on academic and industry collaborative

projects can enhance student's understanding on the design

process to solve live industry problems. It contributes to the

body of design literature to support students learning of

explicit and implicit knowledge. A 2017 learning by-making (LBM)

unit in the School of Architecture and Design, at the University

of Tasmania, Australia, developed a unit for students to

collaborate with Neville Smith Forest Products Pty. Ltd (NSFP).

NSFP is a local Tasmanian timber product manufacturer who

currently stockpiles out-of-grade timber that has limited market

applications. Undergraduate design students from second- and

third-year Furniture, Interior and Architecture degrees

collaborated with NSFP to value-add to their out-of-grade

resource in the LBM unit. A series of design challenges,

observations of industry practice and access to out-of-grade

timber from NSFP exposed students to live industry problems and

provided them the opportunity to build professional design

skills. Students reflected on the collaborative LBM unit in a

reflection journal, which was used to provide evidence of their

learning experiences. The collaborative environment between

academia and industry allowed students to acquire an

understanding of timber product manufacturing that helped them

develop empathy toward the industry problem and influence the

development of new products. This study presents how student

reflections influenced a change in their design process as they

progressed through sequential design challenges to address an

industry problem by adopting Valkenburg and Dorst reflective

learning framework. Interdisciplinary Trends in Design

Education: The Analysis of Master Dissertation of College of

Design and Innovation, Tongji University • Lisha Ren, Yan Wang

This paper expounds the background of Chinese design education as well as the orientation of the design education of Tongji University in the new times, it also collects 458 Master Thesis of College of Design and Innovation during 2010–2016 as analyzed sample. Based on the coding of subject classification, quantitative analysis and content analysis are made in order to understand the interdisciplinary education status of College of Design and Innovation from the two perspectives: the overall cross-disciplinary performance and the relationship between different cross-disciplinary directions. From ANT to Material Agency: A Design and Science Research Workshop • Anne-Lyse Renon, A. De Montbron, Annie Gentes, Julien Bobroff This paper studies a design workshop that investigates complex collaboration between fundamental physics and design. Our research focuses on how students create original artifacts that bridge the gap between disciplines that have very little in common. Our goal is to study the micro-evolutions of their projects. Elaborating first on Actor Network Theory we study how students' projects evolved over time and through a diversity of inputs and media. Throughout this longitudinal study, we use then a semiotic and pragmatic approach to observe three "aesthetical formations": translation, composition and stabilization. These formations suggest that the question of material agency developed in the field of archeology and cognitive science need to be considered in the design field to explain metamorphoses from the brief to the final realizations. ICSE '16: 38th International Conference on Software Engineering May 14, 2016-May 22, 2016 Austin, USA. You can view more information about this proceeding and all of ACMs other published conference proceedings from the ACM Digital Library: <http://www.acm.org/dl>.

The Encyclopedia of Library and Information Sciences, comprising of seven volumes, now in its fourth edition, compiles the contributions of major researchers and practitioners and explores the cultural institutions of more than 30 countries. This major reference presents over 550 entries extensively reviewed for accuracy in seven print volumes or online. The new fourth edition, which includes 55 new entire entries and 60 revised entries, continues to reflect the growing convergence among the disciplines that influence information and the cultural record, with coverage of the latest topics as well as classic articles of historical and theoretical importance.

Research on and with digital technologies is everywhere today. This timely, authoritative Handbook explores the issues of rapid technological development, social change, and the ubiquity of

computing technologies which have become an integrated part of people's everyday lives. This is a comprehensive, up-to-date resource for the twenty-first century. It addresses the key aspects of research within the digital technology field and provides a clear framework for readers wanting to navigate the changeable currents of digital innovation. Main themes include:

- Introduction to the field of contemporary digital technology research
- New digital technologies: key characteristics and considerations
- Research perspectives for digital technologies: theory and analysis
- Environments and tools for digital research
- Research challenges

Aimed at a social science audience, it will be of particular value for postgraduate students, researchers and academics interested in research on digital technology, or using digital technology to undertake research.

Real-Life Distance Education

Pervasive Design

Hardware and Software Perspectives

Concepts and Practices for Design

Information Systems Foundations

Where the Action Is

Heterogeneous Computing

The five-volume set LNCS 8004--8008 constitutes the refereed proceedings of the 15th International Conference on Human-Computer Interaction, HCII 2013, held in Las Vegas, NV, USA in July 2013. The total of 1666 papers and 303 posters presented at the HCII 2013 conferences was carefully reviewed and selected from 5210 submissions. These papers address the latest research and development efforts and highlight the human aspects of design and use of computing systems. The papers accepted for presentation thoroughly cover the entire field of human-computer interaction, addressing major advances in knowledge and effective use of computers in a variety of application areas. This volume contains papers in the thematic area of human-computer interaction, addressing the following major topics: HCI and human centred design; evaluation methods and techniques; user interface design and development methods and environments; aesthetics and kansei in HCI.

Kaj Grønbaek and Randall H. Trigg present a set of principles for the design of open hypermedia systems and provide concrete implications of these principles for issues ranging from data structures to architectures and system integration, and for settings as diverse as the World Wide Web and the workplace. In this book Kaj Grønbaek and Randall H. Trigg present a set of principles for the design of open hypermedia systems and provide concrete implications of these principles for issues ranging

from data structures to architectures and system integration, and for settings as diverse as the World Wide Web and the workplace. The principles, which cover both hypermedia system processing and data structures, reflect results from decades of hypermedia research, including the popular Dexter hypertext reference model and the authors own extended object-oriented version of the Dexter model. One important principle is the notion of links as first-class objects outside the data.

Emerging systems such as HyperWave, Microcosm, and Devise Hypermedia apply this principle to extend the capabilities of the Web. The authors also discuss the management of incomplete and dangling links, time-based media including video and sound, support for collaboration and shared hypermedia structures, worldwide distribution, and integration of third-party applications in open hypermedia systems.

A collection of essays on the interrelationship of social science and software practice. Software practice--which includes software development, design, and use--needs to go beyond the traditional engineering framework. Drawing on a variety of social theory approaches, this book focuses on interdisciplinary cooperation in software practice. The topics discussed include the facilitation of collaborative software development, communication between developers and users, and the embedding of software systems in organizations.

Scenarios, Stories, Use Cases

Proceedings of Isaga 2007