User System Interaction
Eindhoven University of Technology
Industrial projects 2013
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Professionals in User System Interaction Design
The User-System Interaction programme (USI) started in 1998 with 19 students as one of the design programmes offered by the Stan Ackermans Institute at the Technische Universiteit Eindhoven. Since the start of the programme we have established a solid reputation. Our students (USI’s) and graduates are in high regard as professionals. They distribute and pass on the knowledge and experience that is required to really understand how people can and want to be served by technology. The USI programme strikes the balance between challenging technological developments, exploiting design opportunities and fulfilling the needs and desires of people.

USI graduates are trained to improve the interaction between people and systems and to make technology truly accessible and beneficial for all. They are prepared to work on challenging problems, in multidisciplinary projects and in international environments. USI’s work on solutions and services for people in their home, work and social environments by employing user-centered design methodologies, accounting for the benefits for stakeholders and users, and balancing between system functionality and user experience. The programme is organised in modules that are taught by specialists in the domain, who bring in their international experience from universities and industries.

The USI design programme is characterised by its:

- Focus on design – Students are positioned as designers throughout the programme, that is, as intermediate between market demand and technical possibilities, between user needs and product satisfaction.
- Focus on Industry – Students work in their second year on a project in industry or government supervised by university staff and the host organisation.
- Focus on applicability – Students work on assignments and case studies throughout the programme.
- Teamwork – Students with backgrounds in the engineering, behavioral and physical sciences work in small interdisciplinary teams.
- Cross-cultural and international orientation – Students with different national and cultural backgrounds work together.

A very important part of the USI programme is the nine-month industrial assignment, which is carried out in the second year of the curriculum. The general requirements for this assignment are, amongst others, a conceptually challenging problem, participation in a multidisciplinary team, and a strong design and evaluation orientation. We would like to thank the companies and coaches for their support and effort to make these projects into a success. The results of these projects are summarised in this booklet.

We wish the graduates of the year 2013 success in pursuing their professional careers.

8 October 2013

Prof. dr. Panos Markopoulos and Drs. Mia Jelsma
User System Interaction Programme
I am an User Experience Designer from Russia. I obtained my degree in Artificial Systems for the Humanities from the Russian State University for the Humanities in 2010. Having both technical skills and knowledge in linguistics I was interested in Computational Linguistics field. I worked as a Computational Linguist in companies related to search engines for 3 years, where I worked on linguistics, search engine optimization and evaluation of the search results. Autumn 2011, I joined the User-System-Interaction (USI) group in the Netherlands. Here, I focused on design and evaluation of new interactive systems involving users at early stages. The program gave the opportunity to learn from lead experts in HCI and challenged to design systems involving real users and stakeholders. I believe that a good designer is an explorer; curious and passionate about the subject. And good design is a mixture of relevant research, creativity and appropriate evaluation.

Video Analysis Software for Scientific Use: Impact of Data Provenance Information on User Trust, Acceptance and Information Processing

The Fish4Knowledge is a European Union research project that provides an automatic analysis of fish population in the underwater videos. It is tailored to marine biology researchers interested in fish population dynamics and sea ecology monitoring. Automated video analysis introduces uncertainty in interpretations of sightings of fish used by marine biologists and influences their acceptance of the software. We investigated how user acceptance, trust and understanding are impacted by data provenance information on the video analysis process. Including data provenance and software evaluation information requires significant mental effort to understand the analysis in the context of marine research. We discuss possible information processing issues in the framework of Situation Awareness, that could be faced while using the complex data analysis tools in the project. For example, users without sufficient technical background could overlook the data provenance information because their goal of validating the observed fish counts has not been activated. We propose principles for designing similar data analysis tools based on video analysis.

This project has been Supervised by Prof. Lynda Hardman and Emmanuele Beausais-Aussalet (Centrum Wiskunde & Informatica) and Dr. Rene Ahn (TU/e).
I am an Interaction and UX designer with roots in Industrial Design. After working on several successful projects in the healthcare domain during my Industrial Design Master at the Eindhoven University of Technology, I enrolled in the User System Interaction program (USI) in order to develop my skills and knowledge in a multidisciplinary and multicultural environment. In the end USI helped me to establish a balance between the two disciplines I was educated in. My main challenge is to combine Industrial Design methods with UX methods in order to efficiently develop innovative ideas and concepts. In my design projects, I like to place the user in a central role. Establishing an empathy bond between the user and myself is a key step of my design process. I strive to create meaningful products for people, using technology as a means, not as a must. My challenge is to design products and things that go along with people, that are part of daily life, that are appreciated in stead of solely used.

Although the technical foundations for Car-to-X (C2X) communication are considered stable enough for use in practice, the main focus of existing C2X applications is recognizing and reacting to unsafe or inefficient traffic situations. Infotainment and social applications are rarely addressed. In general, the user interaction is very limited. Information is basically ‘pushed’ to the driver without the driver being able to actively interact with the technology. In collaboration with the automotive group of DFKI Saarbrücken, an interactive C2X application was developed. The application allows users to ‘pull’ information when they consider it relevant or suitable. It was envisioned that increasing the interactivity would potentially increase the acceptance of in-car C2X applications and services by allowing users to actively influence which information is presented to them. The developed application allows drivers to interact with environmental displays (billboards) while driving. The billboards present information about movies, and users can use a multimodal HMI to retrieve more information and reserve tickets for the movie. My responsibility within the design team was the design and evaluation of the GUI.

This project has been supervised by Dipl.-Inform. Sandro Castronovo (DFKI) and Dr. Jacques Terken (TU/e).
I was born in 1986 in Wuhan, China. My career as a designer started since 2004, when I entered the School of Art in Southeast University. From there I have worked on different design fields including graphic, product and interior design.

Curious about what determines design decisions, I flew abroad and pursued my master studying strategic product design in Delft University of Technology. I gained insights of product development process from design methodologies, user research and market research. I found out that no matter what is going to be designed, the essence is to deliver an experience to people.

After graduation I became a junior researcher improving interactive interventions in Erasmus Medical Center. I researched on the needs of patients with online exercise and integrated design thinking in defining future scenarios for the interventions.

Attracted by interactive products, I joined USI, which bridges the design strategies, concept development and implementation. This is an important step in my career from which I learned the latest interaction technologies and experimented with prototyping tools. What is even more fruitful, I built a deeper understanding of design possibilities by learning from experts in multi-disciplinary teams. I am ready to continue my future career as a UI / UX designer.

Sleep complaints increase with age. Many elderly people do not get enough sleep, which is harmful for well-being and impede daily performances. This project aims to find out the needs of people in knowing more about their sleep and empowers them to improve their sleep quality through a sleep monitor. The target group is people who have sleep complaints between the age of 45-65 years old.

This project has explored people’s sleep experience, subjective perception of sleep quality and the information they desire to know about their sleep. A concept was created as an android mobile application. It informs people their sleep quality, provides a sleep diary for them to keep track of daily experiences, and shows people their sleep pattern by visualizing the correlation between sleep quality and daily experiences. A strong point of the design is that it presents users an estimation of what might promote and demote their sleep. It also enables users to play with the sleep diary freely and explore their sleep patterns.

The concept was iterated and improved based on expert opinions, a low-fidelity and a high-fidelity user test. In the end, future work is proposed in continuing the implementation and evaluation of the concept.

This project has been supervised by Dr. Reinder Haakma (Philips Research) and Prof. dr. Panos Markopoulos (TU/e)
Driven by my curiosity regarding the mind’s ability to consciously or unconsciously mediate the body’s emotional and behavioral responses to the external environment, I pursued a degree in Psychology at Utrecht University.

During my Bachelor’s I started to develop a specific interest in human cognition, emotion and behavior in relation to the interaction with inanimate systems in everyday life. Moreover, I wanted to put psychological knowledge into practice. I therefore decided to continue my studies in Applied Cognitive Psychology (also at Utrecht University), especially because academic cultivation within this Master’s program was geared towards translating theory into practice. As part of this program I have worked as a junior researcher at the Cognitive Systems Engineering department of the Netherlands Organization for Applied Scientific Research (TNO), working on two projects relating to Multimodal Learning Systems and Brain–Computer Interfaces. After graduation, I found myself to be well grounded from a scientific point of view and I had developed the intellectual skills necessary to apply psychological insights to real-world problems.

The USI program offered a unique opportunity to take the next step towards fulfilling my ambition: designing intriguing user experiences and intuitive interactions between the most complex system known to us – the Central Nervous System – and systems external to it.

Interface design for television (TV) is very specific due to the 10-foot distance between input device and display, and limited capabilities in terms of graphics and animation. In addition, the paradigms for user interface (UI) design are continuously in motion, with gradual extension of the traditional remote control input modality (e.g., pointing, speech, gesture control).

Yet, there are currently no targeted evaluation tools available for assessing the usability of TV UIs. The tools that do exist do not suffice as they are either too generic, do not take into account the context of use of a TV, and/or do not account for the increase in interactive functionality and new input modalities. The lack of a targeted – but also standardized and reliable – evaluation tool is a problem from a business point of view, because it doesn’t permit structured product benchmarking.

Routine competitive reviews of TV sets are frequently applied within TP Vision – fully committed to the renowned Philips TV brand – to guide the process of setting targets in the perspective of overall organizational goals. To enhance the evaluation and benchmarking practices of the TP Vision community, a cost-effective and practical expert review instrument has been developed that specifically addresses key aspects of modern-day TVs, that uses standardized, reliable and valid measures, and that provides a general indication of the level of usability and performance of a TV set compared to its competitors or its predecessors. The evaluation tool incorporates both an objective and a subjective assessment of the quality of user-television interaction, where the objective evaluation uses hard metrics and the subjective evaluation a validated composite measure of perceived interface quality. The tool also includes a scoring system, which is useful for producing comparative ratings that can be tracked as a benchmark and allows for quantification and visualization of the level of TV UI quality. It should also have a significant impact as a reporting framework and communication vehicle between the UX and management team (i.e., knowing where to apply their efforts and showing success). Finally, a tablet-based version of the evaluation tool was prototyped and tested with in-company experts. Results can be used to develop the evaluation application to maturity.

This project has been supervised by Ir. J. de Vet MSc. (TP Vision) and Dr. ir. D. Snelders (TU/e).
I was born in Taiwan, and I love to experience dynamic international context. I am a curious individual with both a creative and analytical background in industrial design and mechanical engineering. I am genuinely interested in culture, human behavior and emotions. I am a foodist who enjoys cooking, tasting and sharing good food. Playing board game with friends is always fun for me.

I have passion for traveling and a belief in people-driven innovation.

“Having a mobile breakfast service in different places and meeting different people has always been one of my dreams. As the smell of fresh breakfast floats through the morning air, accompanied by a soft and crunchy meal, and people being greeted by all these sensations with the nice cup of tea.”

I feel that technology can be as human as the scenario above and brings everyday life into design, and on the other hand, users are given more power to sculpt and work together with technology.

Over the last decades, due to the ageing of the population and the ongoing government budget concerns, informal care has become an integral and indispensable part of the Dutch health care system.

Caren is an online health care application enables caring parties to organize their care for care recipients. This project is performed in collaboration with Nedap Healthcare. The main objective is to redesign the flow and interface of the Caren application based on qualitative research, and deliver them into a practical concept with a better user experience. The aim is to keep both informal caregivers and care recipients connected by using a more intuitive Caren redesign, which takes user’s experiences and emotions into account.

In the informal caregiving context, even the tiniest and the simplest detail of the experience could have a big impact. This project starts with a strong focus on understanding the goals of Caren’s target user group, and how the most important design problems should be defined. Both pragmatic and human-centered approaches are taken in the project. The insights learned from the research are reformulated through contemplation, resulting in the design vision, interaction quality and product quality of the redesign. Furthermore, the concepts are developed through several iterations by creating working prototypes and conducting user evaluations. The refined interface design with elaborate guidelines is presented. This design allows users to easily navigate through and manage their care information on Caren.

This project has been supervised by Ir. A.C. Foeken (Nedap) and Dr. J.M.B. Terken (TU/e).
I have an interest in human behavior, technology and the large area in-between. This has manifested in a Bachelor of Science degree in Social Psychology and a Master of Science degree in Human Media Interaction. Due to the switch from a gamma to a beta education, I was a bit unsure about my skillset and what I wanted in my professional future. That is when I came across USI. During the two years of the program I have learned about how to prototype a system, share ideas with colleagues, develop websites and to look for boundaries in everything I do. USI has improved the certainty about my skills and allowed me to develop myself as a professional. My professional future after USI is still uncertain, but now I know I have the right skillset to succeed in the industry. I am looking forward to pushing my boundaries and contributing to the industry in a productive and positive way. And should I need to have some time off from work and for myself, I will just grab my mountain bike and go tear up some tracks.

TagTrainer long term progress feedback

A website was created that works based on the TagTrainer package. The TagTrainer package consists of the Tiktegel and the TEC software. The Tiktegel is a board which allows for interaction using everyday tangible objects. With the TEC software, exercises for the Tiktegel board can easily be created.

The website shows long term progress based on Tiktegel interactions. The feedback on the website consists of a line chart showing the percentage of correct interactions with the Tiktegel and a heat map showing where the interactions took place on the Tiktegel. The content of the website was based on interviews and conversations performed with therapists that work with children with Cerebral Palsy. Creating user stories based on these conversations resulted in several concepts for the project. One concept out of many was iteratively improved by using the Scrum framework, resulting in the final product. Recommendations for future releases of the website are discussed.

This project has been supervised by Daniel Tetteroo PDEng (TU/e) and Prof. dr. Panos Markopoulos (TU/e).
As a youngster, especially my grandfather astounded me by his motivation to even turn a simple lawnmower into a racing car. Although in his daytime job being a hairdresser, this must have been the spark that ignited my engine, that you can do anything when you're motivated. I knew my preferences lay both in the technical and social domain. But it was applying psychology to everyday questions that I enjoyed most, and so I started my master in work and organizational psychology at Maastricht University. My supervisor introduced me to the field of aviation psychology. Here my focus was on the interaction of the actor with a challenging highly-technical environment, and how to select and train people on the skills needed.

Both the experience I acquired doing research in the field of human factors, and my lingering ambition of involving technology in this process, made me apply for USI. My time in USI and Philips Research has been an amazing experience to meet and get inspired by some great people. Looking back at my professional life and to the challenges ahead, I'm confident my diverse blend of skills and knowledge will help me tackle issues in the years to come. People should stay curious to unknown phenomena around us, while making things more clear, intuitive and intriguing to others. Only then we can tackle the (design) challenges of the future.

Light is part of our entire life. However, how we perceived it and influences us is also determined by our environment. My project was embedded in a larger lighting research project, within Philips. My tasks were to both study the contextual factors and minimal requirements of lighting from several prime environments, and to design and evaluate lighting concepts within the work-at-home environment.

A preference for lighting can be an individual choice, but in common places a specific light setting can be designed, tailored to the activities and needs. During this phase, I focussed on several environments which were of interest to Philips. The results of this study were published as a chapter for the internal technical note our group wrote for Philips.

Next, my project entailed a lighting design track, in the work-at-home environment. The first lighting concept is a system that dynamically changes the colour temperature and brightness of the lighting. The aim of this concept is to provide a soothing lighting atmosphere when high levels of stress are detected, while adapting to a more alerting environment when low levels of activity and stress are detected.

The second concept relates to the placement of tiles on the ceiling, which server both as a source of light and a virtual view outwards. By linking the behaviour of the tiles to external factors like day-night cycle, or simulated exotic or distant environments, users could create their personal lighting environment. Both concepts continue to be evaluated within Philips.

This project has been supervised by Dr. Boris de Ruyter (Philips Research) and Prof. dr. Panos Markopoulos (TU/e).
Liang Hiah

Hello! I am Liang. I was born in Malaysia, but grew up in the Netherlands. Zeeland, to be more precise. I still regularly visit family in Malaysia and can highly recommend it as a holiday destination, especially if you enjoy Asian food!

My interests are broad and that’s why I’ve always had tons of hobbies to keep myself busy. I enjoy running, computer games, reading books, playing volleyball and squash. I have always been interested in web development and dabble a bit in some simple graphical design. Furthermore, I really love traveling; diving into the culture and learning languages of the places I visit.

After a short period of exploring computer science in Nijmegen, I switched to studying psychology at the University of Twente, with the goal to focus more on the interactivity between a system and its users. Just a couple of years ago, the popular terms for psychologists active in this field used to be human factors, cognitive ergonomics, or simply usability. Now, all the different disciplines that collaborate in this specialty have been united under the banner of User Experience. The multi-disciplinarity, along with having colleagues from different cultural backgrounds, was an amazing and unforgettable experience during my two years with the User-System Interaction program.

Improving the Usability of Quality of Care Measurements for the Health Care Professional

Drastic changes in health care services over the last decade have sparked interest in developing better measurements of quality of care. Internationally, health care policies have shifted focus from assessing costs and registering activity, to assessing the delivered quality of care, emphasizing efficiency and effectivity of health care services.

In the Netherlands, this reform has changed the government’s role from regulating the health care system, to controlling the quality, accessibility, and affordability of health care as a whole. Health care organizations are now obliged to participate in a large number of quality of care measurements, increasing the administrative load of employees at every level of the organization.

When switching from physical paperwork to electronic systems, many opportunities arise in the use of such quality of care measurements. The purpose of this project is to investigate current usage of quality of care measurements and its position within the health care process, in order to develop a product that is able to make such measurements more useful, efficient to carry out, and satisfy the user experience of the product’s users. In other words: to improve the usability of quality of care measurements for the health care professional.

This project has been supervised by Xander Schoemaker and Mark Weernink (Nedap) and Dr. Jacques Terken (TU/e)
Hello there, I am Jeroen Keijser, a User Experience Designer, who happens to be both Dutch and Canadian.

Life is there to be experienced and embraced. From jumping off a cliff in Rio de Janeiro hang gliding, to horseback riding through the rainforests in Costa Rica to twirling around the floor at a masquerade ball, you can find me embracing the diversity and variety that exists in this world of experiences.

As a user experience designer, I am in the lucky position to be able to create amazing user experiences. I thrive in the ideation, creation, and discussion of novel concepts that become the seeds for great experiences. Sketching, prototyping, interviewing and other tools allow me to help those seeds grow and to prune away undesirable branches until the seeds blossom into fantastic full nuanced experiences.

To enable me to do this, I sharpened my technical skills at the University of Calgary (B.SC. and M.SC. in computer science), my creative skills at the Banff Arts Centre (working with artists, fashion designers, and engineers), and my overall UX skills during my time at USI and at Philips.

I look forward to creating more amazing experiences in the future.

Over the past 20 years in pediatric oncology the 5 year survival rate has increased drastically from 30% to 80%. This is due in part to the practice of enrolling the majority of patients in clinical trials and the resulting research progress. In stark contrast, the enrollment rates in adult oncology are generally low (3% -5%) and has slowed cancer research. In the hopes of having similar success and breakthroughs in adult oncology, there is a strong desire to increase the enrollment rates.

In the context of the EU project entitled “Enabling information re-use by linking clinical Research and Care” (EURECA), at Philips Research the goal of the current project was to design and create a clinical trial recruitment prototype. Yakobo is the result.

Yakobo was developed using an iterative design approach. The design space and constraints were delineated through the use of sketches, a problem space probe and informal interviews. After metaphor exploration and the creation of mockups, the most promising UI ideas were evaluated in an expert review. A water cascading metaphor was chosen and developed into a conceptual prototype shown at the EURECA annual review. This metaphor was further developed into an interactive touch prototype tested in two expert reviews.

Yakobo and its central water cascading metaphor are a promising UI direction that appealed to both clinicians and researchers alike. It could be adapted to clinical trial recruitment in other disciplines, and potentially to visually filter other data.

This project has been supervised by Ir. Njin-Zu Chen PDEng (Philips Research) and Dr. Jun Hu PDEng MEng (TU/e)
I’m a Mexican user experience designer with a background in media art and graphic design. I am European Media Master of Arts (EMMA). I have devoted a considerable part of my professional life to digital art in the roles of researcher, teacher, cultural manager, and practitioner. My creative work in this field has been awarded grants and prizes and has been shown in Europe, Africa and America. I decided to join USI because I was interested in applying the creativity and skills that I had developed in media art to projects aimed at improving people’s quality of life and that had a better opportunity to influence their daily experiences. In USI my education was completed and updated by adding new specialties like cognitive psychology, perception and cognition and behavioral sciences. In addition, the teamwork in USI introduced me to the working culture of the Nederlands, and the strict deadlines reinforced my ability to perform schedule driven work. I became in love with user-centered design and its related methodologies. I specially enjoy brainstorming to find design solutions and creating concepts taking into account the users’ needs and requirements. I like to see ideas brought to reality in the form of prototypes and presented back to the people whose input originated them. I find contact with users through testing always surprising and enriching.

**LinkedTV News:**

*designing a second-screen companion for automatically enriching video news broadcasts*

*LinkedTV* is an EU research project aimed at exploring the integration of TV content with Web content in meaningful ways through the use of semantic relations and automatically generated links.

The inclusion of hypermedia in broadcast video implies combining content intended for a lean-forward medium (the Web) with a lean-back one (TV). This transposition poses particular interaction and information related challenges such as: tension between lean-forward content and lean-back consumption, tension between multiple and single users, and possible information overload.

*LinkedTV News* investigates these challenges through the design and testing of a second-screen user interface for interacting with hypertext TV in the domain of TV news. The goal is to understand user requirements for watching news in the *LinkedTV* environment and to use the proposed interface as a tool for further exploration of interaction and information retrieval in the context of linked video.

A first user study ascertained broad user information needs, such as comparing different information sources and understanding the local impact of international news. A selection of the needs found formed the basis of the information distribution within the interface. Other user requirements, such as choosing between synchronous and asynchronous modes of interaction, informed the interaction design. Prototypes of diverse fidelity were produced and tested. From the results of the tests, strengths and opportunities for improvement were identified, solutions were proposed and design guidelines were extracted.

This project has been supervised by Prof. dr. Lynda Hardman (Centrum Wiskunde & Informatica) and Dr. Rene Ahn (TU/e)
I am a user experience researcher and designer with a background in psychology. I was born in May of 1985 in a small Russian town. My schooldays taught me to be active. Later in the university I took part in the social and scientific life, worked as a psychologist in a kindergarten. After university I moved to Moscow. I had been selecting IT-specialists in an HR recruitment agency for 2 years, when I recognized that the work was too ‘procedural’ and I decided to change my life. I studied at the National Research University Higher School of Economics, in the department of Organizational Psychology, from where I gained a master’s degree of psychology. At the same time I changed my professional field, becoming a usability specialist, working in that role in a usability-agency for 2 years. I worked on projects with such clients as mobile and tax operators, insurance providers, banks and others – mainly web-based. Despite the fact that my experience as a usability specialist had been successful, I always felt I was lacking in education in this field and I decided to enroll on the USI Program at the TU/e. Work in multicultural and multidisciplinary teams has expanded and enhanced my professional skills. The USI Program has provided me with the ideal preparation for a future career in the user experience field.

T-Xchange has created a series of serious games aimed to train the player how to respond during specific situations or/and to raise awareness about a specific topic. The goal of the current project was to identify and validate game elements responsible for reaching learning goals.

In public opinion, learning and playing are often seen as opposites: learning is usually associated with some effort and concentration, while playing is related to freedom and joy. In the light of popularity of computer and video games, serious gaming as a way of studying by playing is a very promising direction. However, research on this topic is still lacking.

In this study we aimed to identify how the realism of the story and visual representation affects knowledge construction in a dilemma-based game. The research was conducted as a randomized controlled trial. Four scenarios with different levels of contextualization of story and aesthetics were developed the research. The study was carried out online. Respondents received a link to a form with a knowledge test, played a game, filled in a game experience questionnaire and the knowledge test again.

The findings of the research allow us to conclude that there is a significant effect of story and no significant effect of aesthetics on the knowledge construction. However, it should be noted that the scenarios were not very different and the participants were not representative of the target audience of the game. Therefore, the experiment results can be generalized to serious games only for the general public.

This project has been supervised by Dr. Erik van der Spek (TU/e).
I am Christian Sallustro from Noto in Italy.
I graduated in Florence as an industrial designer on March 2011. For me, design is a passion since I was a child; creativity has always been around me, inspiring me to explore new materials, tools and environments to build new games, to share with friends and to have fun with. After years I have realized that it was not just for fun but it was big part of my lifestyle. So I have decided to become a designer as a profession. By participating at USI course, I have developed my skills and myself as a designer as well as improving skills of others by inspiring one and another. Moreover, I have advanced my ability and interest in working in team with people from different educational and cultural backgrounds.

My goal is to see how design can influence human behavior, in order to reach a balance in which both parts are effectively integrated and strengthen each other.

**Timo & Friends**
A Diagnostic Tool on the Time Perception of Children with ADHD

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common childhood behavioral disorders. ADHD can negatively impair many aspects of children daily life at home, school and interpersonal relationships. Although there are many suggested combinations of ADHD diagnosis approaches, no diagnostic tool has been designed ad-hoc to detect the symptoms of time perception problems in ADHD children. A computer game can be a powerful tool to be used in such a diagnosis. This project has been developed in collaboration with Kempenhaeghe hospital in Heeze (NL).

This project has been supervised by Dr. Jos Hendriksen (Kempenhaeghe), and Dr. Jun Hu PDEng (TU/e).
I have always been interested in why people behave the way they do, and how we can influence that behavior. During my master in Clinical and Health Psychology at the University of Utrecht, I did my thesis at Philips Research Eindhoven in the domain of changing health behavior. Here I became very interested in health behavior and persuasive technology. So to learn more about health behavior and how to influence it, I studied the master Health and Behavior at the University of Amsterdam. My next step was to learn more about the combination of psychology, technology and design. Technology based on psychological insights is a useful medium to influence behavior, because it has possibilities extracting beyond human capabilities. However, to influence health behaviors, there are far more possibilities to use technology than nowadays is done. I would like to be part of using these opportunities. The User System Interaction program was perfect for me to learn more about technology and design. It helped me to work in a multidisciplinary team, become more creative and become more aware of the possibilities technological products can offer to people.

In the near future, I see myself working in a multidisciplinary team to develop products aimed at changing or influencing people’s behavior, in the health domain or the sustainability domain.

Zoë Terken

Physical activity (PA) among elderly living in care homes is dramatically low, which is a serious issue, since PA can have profound physical, cognitive, emotional and social benefits for them and may indirectly reduce health care costs. A design project was started to explore what solutions can address this issue. The focus of the project was based on literature and user research, encompassing interviews with and observations of users and interviews with stakeholders. It resulted in the focus on a system that stimulates PA throughout the day and fosters fun and social interaction. User and stakeholder feedback on several storyboards led to the concept of the Interactive Wall, a large touch screen placed in the hallway. With the Interactive Wall, residents can play games personalized in display dimensions and content, which contribute to strength, balance and coordination. To evaluate the concept, the behavior of residents passing by an interactive prototype in the hallway of a care home was observed. It was found that the prototype did not appeal enough to most of the residents to approach it. For the majority of people who used the system, it was not fun enough to use it a second time. However, social interaction did emerge around the system. A number of recommendations involving these and other aspects in both the hardware and content of the product were made.

The project was carried out within the Playful Interactions group and in close collaboration with the Nijha Expertisecentre.

This project has been supervised by Annemiek van de Grint (Nijha Expertisecentre) and Dr. ir. Tilde Bekker (TU/e)
For as long as I can remember, I have been drawn towards technology. I not only loved tinkering with computers and other electronics on my own, but also shared my experiences with others. This is how I learned that while technology can be a great asset in both work and play, it could also be a source of frustration; as many people are still struggling while controlling their digital equipment.

During my bachelor and master studies in the Information Science and Content and Knowledge Engineering programs at Utrecht University, I learned that though UI/UX, I could help in making technology approachable and enjoyable for all. Continuing with the post master program User System Interaction at the Eindhoven University of Technology, I extended my knowledge from interaction in computer applications to whole products and experiences.

With the current rate at which new technologies are introduced, I am eager to explore new possibilities and integrate them in both applications and products, making them more accessible and enjoyable to use.

In the development of complex systems, expertise from numerous domains is integrated to create one target product. This expertise is drawn from system architects and designers whom all have distinct backgrounds. Components of these complex systems are closely related; if one component is changed, it may cause side effects in other components. This poses a problem, as designers do not have a complete understanding of the system due to its complexity; possibly making changes that cause unknown side effects.

In these situations Design Framework can be used: a methodology and an application to capture and support system components and their relations. While the method was received well, the application was found difficult to use. Users found it difficult to navigate between the many views and a lack of catering towards different working styles.

Aim of this study is both to redesign interaction of the application and identify core values of target users. This has been done with several user experience methodologies, including user interviews, expert heuristic evaluation, lo-fi and hi-fi prototyping, and user testing. Usage of the redesigned version shows that the user experience of the application has improved, increasing both the understanding of the tool and a higher keenness to integrate the software in their daily workflow. Additionally, a set of core values and guidelines has been devised, providing assistance in continuing the development of the Design Framework application in a successful manner.

This project has been supervised by Dr. Roelof Hamberg (TNO) and Prof. dr. ir. Jean-Bernard Martens (TU/e).
The final project took place in the FEI Company, a leading supplier of scientific instruments for industry and science. The goal of the project was to redesign the User Interface of the new FEI Transmission Electron Microscope (TEM) “Metrios”. Metrios was created to provide fast, precise measurements using automated processes and measurement procedures. The requirement was to be easily operated through a simple and highly usable interface without requiring specialized operator training.

The project was planned and executed following the User Centered Design (UCD) process. That involved four phases: context specification, user requirements specification, design, and evaluation. First, the context and requirements were identified by reviewing the FEI project documentation and through interviews with the FEI stakeholders. Then, the design cycle started with the usability evaluation of the current User Interface by means of user tests and heuristic evaluation. Subsequently, the new design was developed through an iterative process. Two working prototypes, a low fidelity and a high fidelity, were created and tested with users. A final prototype was then developed and delivered together with an explanatory document and design guidelines for future projects.

This project has been supervised by Dr. Martin Verheijen (FEI Company) and Dr. Jun Hu PDEng (TU/e).
After my pre-university education my interest was in both psychology and “something with computers”. The study Information Science at the Utrecht University was a good combination of both. Here I learned how people interact with systems and how I could improve the interaction between people and computers. After my bachelor I continued with my masters Content and Knowledge Engineering (Utrecht University) to learn more about usability and testing.

During these years I learned the reasons for advocating the user’s side during the design of software, but could never use it into practice. That is why I started the User System Interaction programme of the Stan Ackerman Institute at the TU/e. During this period, I loved to work with people with different education and cultural background to discover different points of view during the creative process of making products and software. My interests grow further in improving the interaction between people and systems and also in the design of software. I look forward to apply my knowledge in my future career.

TagTrainer is a tangible, interactive platform which can be used for arm-hand rehabilitation of stroke patients. It consists of the TagTile board, RFID-tagged physical objects, and software called TagTrainer Exercise Creator (TEC) and TagTrainer Patient Interface (TTPI). The TEC enables therapist to create and adjust exercises, and the TTPI allows selecting and combining of exercises into personalized exercise programs.

The main goal of this project was to improve and redesign the interfaces of the TEC and TTPI. The secondary goal was to implement TagTrainer at Jessa Ziekenhuis (BE) and evaluate whether TagTrainer is useful for arm-hand rehabilitation training, usable for the therapists, and whether therapists are willing to create and share their exercises. During an eight week study five therapists from Jessa Ziekenhuis were observed using TagTrainer and questioned about their experience. The results from this study were used to make a redesign.

According to the therapists, TagTrainer was only useful for a part of the target group. The system was usable but patients were hardly able to work independently. The redesign solves this issue by providing audio feedback about the actions. Therapists were willing and able to make exercises if they had the time but in practice they didn’t have the time and would use existing exercises. They would prefer exercises made by colleagues instead of other therapists. Future research is required to determine if the redesign enables patients to work more independently such that the therapists have more time to help other patients or to make exercises.

This project has been supervised by Prof. dr. P. Markopoulos (TU/e) and D. Tetteroo PDEng. (TU/e).
My name is Lilha Willems and I was born and raised on Curacao. I was 18 years old when I came to the Netherlands to continue my studies in Enschede. I completed my bachelor in Computer Science and after trying out two different Computer Science master programs, which didn’t really appeal to me, I decided to switch to Psychology. Learning about people and their capabilities really peaked my interest much more than I ever thought possible. I’ve really found my true interests and passion in Psychology: human factors, interaction design and human centered design. I have since completed my master in Cognition, Media & Ergonomics, and pursued my new found passion by signing up for the User System Interaction (USI) post-master program at the TU/e. After USI I want to continue to do human centered design and be active in the field of human factors, information visualization, and storytelling. In my free time I enjoy being active in sports, reading books, eating healthy, meditation, travelling, dancing, and trying out new things whenever possible.

TagTrainer is a result of the WikiTherapist project in response to the increasing pressure on the health system due to the increasing number of patients. This technology is aimed to be used for arm-hand rehabilitation where the ratio of patients to therapists is quite high. At this point however, TagTrainer still lacks feedback that enables stroke patients to learn and improve their motor skills without needing the constant presence of the therapist. Through literature- and user research, and given the capabilities of TagTrainer, a concept for giving feedback was developed and evaluated with therapists. Later on the concept was refined and prototyped to work with a vest that measures patient’s compensation for giving more relevant feedback. The prototype gave feedback about time, and the number torso- and shoulder compensations made during the exercise. It was evaluated with primarily stroke patients and underwent two additional iterations.

The main focus of the prototype evaluation was whether the stroke patients understood the information provided and if they found it useful. The results show that large amounts of information on a single screen can make it difficult for stroke patients to understand. Clarity and understanding were improved when the amount of information were reduced. It is also important to stroke patients that the feedback is personal and relevant to their performance. Based on the literature research and evaluations, guidelines and recommendations are given for providing feedback to stroke patients and for the design of a feedback system for TagTrainer.

This project has been supervised by Daniel Tetteroo PDEng. (TU/e) and Prof. dr. Panos Markopoulos (TU/e).
3TU. School for Technological Design, Stan Ackermans Institute offers two-year postgraduate technological designer programmes. This institute is a joint initiative of the three technological universities of the Netherlands: Delft University of Technology, Eindhoven University of Technology and University of Twente. For more information please visit: www.3tu.nl/sai.