HYBRID SOCIETIES

Kinematic and dynamic characteristics of handover actions of human dyads and their influencing factors.

Date

Thursday,
July 15, 2021

Time

11:00 - 12:00

Project

A01

Presenter

Lena Kopnarski

ABSTRACT

A handover action describes the transfer of an object from one person to another. Although it is an everyday interaction between two persons, this form of joint action has not been explored much. By analyzing kinematic and dynamic data of a handover action, insights in the field of social, cognitive and neuroscience can be gained or tested. Furthermore, these findings can be used to further develop the interaction between human and artificial agents. In order to compile the state of research to date, a systematic review of the literature was conducted. Studies were included in which human dyads performed a handover action and kinematic and/or dynamic data were recorded. A total of 5,453 studies (PubMed, Web of Science, PsycINFO, Scopus) were screened, resulting in 11 eligible studies. The results indicate that a handover action for the deliverer is comparable to a reach-and-replace task with accuracy. The kinematics and dynamics of the deliverer are not affected by manipulations of the receiver behavior. The extent to which the receiver is affected by the movements of the deliverer varies greatly between studies. In summary, it can therefore be said that no uniform statement can yet be made about the characteristics of handover actions.

TECHNISCHE UNIVERSITÄT CHEMNITZ

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HYBRID SOCIETIES

Creating an anthropomorphism questionnaire - A multidimensional approach

Date

Thursday,
July 15, 2021

Time

11:00 - 12:00

Project

B01

Presenter

Oliver Rehren

ABSTRACT

Research on how we interact with and react to EDTs becomes more and more important. One of the main underlying processes in this interaction is the tendency to attribute human characteristics or behaviour to non-human entities, which is often referred to as anthropomorphism (Epley, 2007). To understand this process, different questionnaires were developed (e.g. Banks, 2019). While most of these questionnaires have been evaluated and validated, there is a lack of pivotal aspects in these instruments. Another problem lies in the conceptual structure of these instruments. The selected items within these questionnaires are often ambiguous (Moore, 2012). In addition, the dichotomous arrangement of the items appears to be arbitrary and not necessarily conceptualized as natural opposites which can lead to reliability problems (Stein et al., 2019). The following study aims to tackle these shortcomings. Instead of the usual psycholexical approach, we followed a different, more theoretical path. We formulated a multidimensional model of anthropomorphism. Besides appearance this model includes additional visual factors like movement and gestures as well as higher human abilities. This model also takes dehumanization processes into account, ultimately resulting in the uncanny valley phenomenon. We then extracted unambiguous items from existing questionnaires and reassigned them to the different factors of the proposed model. After enriching the underrepresented factors with newly created items, we conducted a traditional forward and backward translation (english – german). We then gathered data via an online experiment to evaluate and validate both versions. We finally performed a confirmatory factor analysis (CFA) to see whether the theoretically postulated dimensions could actually be mapped with the used item structure.

TECHNISCHE UNIVERSITÄT CHEMNITZ

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HYBRID SOCIETIES

Where are they looking? – Gaze estimation in two dimensional settings

Date

Thursday,
July 15, 2021

Time

11:00 - 12:00

Project

C01

Presenter

Inka Schmitz

ABSTRACT

The ability to determine and follow another person's gaze is an important factor of communication. In online experiments, which mimic a video-conference setting, "receivers" are asked to estimate gaze targets from pictures of human "senders". In an initial experiment these images were taken from a database that also provides ground truth on thesenders' actual gaze target. As the pictures are two-dimensional, the receivers' estimates need to rely on assumptions about the geometry (e.g.,camera placement) of the sender's setup. We foundt hat the estimates of gaze targets deviated from the actual targets more in the vertical than in the horizontal direction. Estimates furthermore depended on the eye position in the picture and the estimated geometry. The receivers' accuracy and precision in estimating senders' gaze was considerably lower than what could be expected based on gaze estimates in everyday life. To uncover the reasons for this discrepancy, we designed a gaze direction database for further experiments that systematically controls a variety of factors, such as the sender's position relative to camera and screen. Our work suggests that humans use more information than the eye and the pupil position to determine the target of another person's gaze, which need to be considered when designing virtual agents for interaction purposes.

TECHNISCHE UNIVERSITÄT CHEMNITZ

DFG

HYBRID SOCIETIES

Formal representation of multimodal communication

Date

Thursday,
July 15, 2021

Time

11:00 - 12:00

Project

D01

Presenter

Akira Charoensit

ABSTRACT

Project D01 focuses on the ways in which multimodal communication reveals one's intention, mental representations, and cognitive ability. Taking multimodality into consideration, I will develop a new formal representation system that can capture the notions put forward by Fricke (2013, in press) of code integration and code manifestation for various types of multimodal ensembles. The system will be based on previous works such as Posner (1993, 2000). One criterion for such a system is that it should be able to withstand empirical tests and explain phenomena in developmental psychology and cognitive science. Specifically, its levels of complexity should echo different stages of human children's cognitive development as they begin to integrate various modes of communication. The system should also pertain to cognitive models such as the multi-component model of working memory as outlined in Repovš & Baddeley (2006). In addition, the system should be able to serve as a solid groundwork for applications in the fields of robotics and computer science. My ultimate goal is to integrate a multimodal reasoning system into an artificial intelligence agent, building on existing frameworks such as the Incremental Recruitment Language (Steel & Hild, 2012), and improve human-robot communication.

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HYBRID SOCIETIES

Solving least squares systems in different contexts using different basis functions

Date

Thursday,
July 15, 2021

Time

11:00 - 12:00

Project

E01

Presenters

Paul Dommel,
Tobias Hofmann,
Laura Lippert

ABSTRACT

We describe several mathematical concepts that are designed to detect events and clusters in high-dimensional data. The approaches we present comprise graph Fourier methods, hyperbolic wavelet regression, and regularized least squares methods. First empirical analyses are based on data sets from the BMBF project KomfoPilot and A01. In this context, we discuss the potential and limitations of the proposed ideas.

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HYBRID SOCIETIES

An attention-guided vergence control model – Connecting the iCub robot with the neural simulator ANNarchy

Date

Thursday,
July 15, 2021

Time

12:00 - 13:00

Project

A02

Presenter

Torsten Fietzek

ABSTRACT

An important part of human vision is the stereo vision capability, which is essential for depth perception and thus for motor navigation. In stereo vision, the eyes are controlled through vergence which ensures that the eye focus in the correct depth plane. Gibaldi et al., 2017 set up a biologically motivated neurocomputational model for vergence control using the iCub humanoid robot. To further improve the focus selection especially for small or task specific objects. We propose to combine vergence control with attentional selection using a neurocomputational model for object localization (Beuth, 2020). These mechanisms will be used to guide the vergence control at a specific object instead of an extended depth plane. As the connection to the robot is one challenge in robotic control especially when multiple models are developed separately and should be plugged together at a later stage, we developed a control interface for the iCub robot. This interface encapsulates the YARP based robotic control on the robot side to unify the access and facilitate it for non-roboticists. On the model side the interface can be directly linked to the neural simulator ANNarchy to establish a low-level connection via gRPC. Furthermore, it handles some common preprocessing steps like the grayscale of the RGB input image. Since the interface is implemented in C++, this preprocessing steps benefit from this low-level implementation.These properties lead to performance improvements in comparison to an individual implementation based on YARP and ANNarchy only in Python. In addition, it implements a simple synchronization mechanism which is important for closed-loop control problems like the vergence control or object grasping. Since the computational costs are often too high to reach real time performance.

TECHNISCHE UNIVERSITÄT CHEMNITZ

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HYBRID SOCIETIES

Disguising undesired cues in motion

Date

Thursday,
July 15, 2021

Time

12:00 - 13:00

Project

B02

Presenters

Sabrina Bräuer,
Samer Salamah,
Tom Uhlmann

ABSTRACT

The main goal of this project is to develop a parametric motion generator which can control the movements of an avatar so that the resulting motions will be perceived as natural human motions without any special personal movement and individual characteristics. Such a motion generator might be advantageous to disguise certain personal characteristics such as gender, age, or a physical disability, for instance, in a job interview involving avatars as representatives. 3D gait motion data of 12 subjects has been captured and analyzed. The main findings of the data analysis are: (1) The progression functions of the joint angles involved in gait motions show certain characteristic shapes. These shapes can be mathematically well modeled and reproduced with high similarity to the captured data. (2) During the gait cycle there is always a foot fixed on the ground called stance foot, which can be employed in a forward kinematical approach to compute the global body position at each time. Utilizing these observations, a basic motion generator is developed. Given a desired step length and speed, the developed motion generator can synthesize gait motions reflecting the personal characteristics included in the captured data used during the modeling phase. In a next step, the motion generator will be extended to disguise optionally these personal characteristics. To evaluate the synthesized motions, a visualization framework is developed, which can animate 3D avatars using the synthesized as well as the captured gait motions. The developed visualization framework can also create videos automatically from the animated data, which will be shown in a user study to evaluate the naturalness of the generated motions compared to the corresponded captured ones. The presented poster shows an overview of the whole project as well as a brief description of the motion generator and the visualization framework.

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HYBRID SOCIETIES

Spatial orientation in telepresence

Date

Thursday,
July 15, 2021

Time

12:00 - 13:00

Project

C02

Presenters

Zhanna Borodaeva,
Xie Ning

ABSTRACT

In synthetic environments, spatial orientation can be supported by real self-motion and static environmental cues, including landmarks and boundaries. The C02 studies disentangle the impacts of these cues in virtual reality orientation and investigate means of support. In the first study, we varied the availability and distance to a wall as a boundary for spatial reference. Participants performed a pointing task after passive forward translation. A wall close to a target location reduced pointing error on the forward axis, but increased reaction time. This indicates strategic use of a wall for spatial reference in spatial updating. The second study employs the same pointing task. We investigate the impact of boundaries of different shapes, i.e. rectangle, trapezoid, and ellipse. We vary distances from a target to a boundary and objects as landmarks as well as types of motion (passive, real walking). We explore weights of landmarks and boundaries utilizing a dual-cue combination paradigm. Furthermore, a planned online study with telepresence robots investigates weights of close/far landmarks before and after 90 degree shift. Finally, a future VR and online navigation study will be conducted. Participants will perform a navigation task in a maze-like environment, which needs them to visit several target positions in sequence. We want to explore whether and how continuous perspective changes between an egocentric perspective and an allocentric map overview will help participants with their spatial orientation in complex environments.

TECHNISCHE UNIVERSITÄT
CHEMNITZ

DFG

HYBRID SOCIETIES

Spatial orientation in different virtual-reality-systems

Date

Thursday,
July 15, 2021

Time

12:00 - 13:00

Project

C02

Presenters

Jennifer Brade,
Sven Winkler

ABSTRACT

In virtual or synthetic environments, the process of spatial updating is often disrupted or incompletely supported by a lack of sensory experience, which impairs spatial orientation. Supportive sensory experiences, which address different sensory channels, can be used to improve spatial orientation in virtual scenarios. However, the virtual-reality-system itself also plays an important role, as does the type and scope of the stimuli to be used. A basic distinction can be made between head-mounted-displays (HMD) and different projective VR-systems (e.g. Powerall, CAVE). While with HMD-systems the movement possibilities of the user offer much more leeway, projective VR systems only have a limited tracking space and thus hardly any possibilities for real translations and only limited rotations due to the structure. For this, the user sees his own body in projective VR systems and thus receives a different self-perception than with HMD systems. Due to the different self-perception in projective and head-mounted virtual reality systems, it is possible that presented cues are also perceived differently. In order to improve spatial orientation, especially in industrial application scenarios, it is essential to consider different VR-systems. Two studies are presented: Study 1 was carried out in a projective VR system (high immersive 5-sided CAVE) with auditory and visual cues, whereby a triangle completion task was used as a spatial updating task. Furthermore, the concept of a further study is presented in which the 5-sided CAVE and an HMD are to be considered with regard to the effect of optical cues and their effects on the feeling of vection (self-motion illusion) and spatial updating.

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DFG

HYBRID SOCIETIES

Detection of implicit driving cues as the basis for a proactive driving style of highly automated

Date

Thursday,
July 15, 2021

Time

12:00 - 13:00

Project

D02

Presenters

Konstantin Felbel,
Ann-Christin Hensch

ABSTRACT

Automated driving aims to increase road safety, traffic efficiency and driving comfort. To support smooth interactions between manual drivers and automated vehicles (AVs), the communication and anticipation of prospective movements is required. In manual driving, road users interact by explicit (e.g., braking lights) and mainly implicit communication cues (e.g., vehicle's deceleration). To enhance the understanding of implicit communication in traffic, we collected respective communication cues and identified relevant scenarios that required implicit communication. Our results showed that implicit cues are context-dependent and therefore difficult to interpret. Thus, we addressed these challenges by different experimental methods. The results of a naturalistic driving study and a video annotation study showed that explicit and implicit communication cues are used by human drivers to anticipate and announce prospective movements to surrounding road users. Moreover, the results of different lab studies depicted that various situational (e.g., speed) and driver characteristics (e.g., drivers' age) need to be considered in AVs when implementing a familiar driving style comprising implicit communication cues. To further validate our findings, a driving simulator study is currently in preparation. Our future activities will focus on specific cues and the relevance to anticipate prospective driving manoeuvres of surrounding traffic participants.

TECHNISCHE UNIVERSITÄT
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DFG

HYBRID SOCIETIES

A preliminary study for peripheral vision implementation

Date

Friday,
July 16, 2021

Time

11:00 - 12:00

Project

A03

Presenter

Aline Püschel

ABSTRACT

During a variety of activities or specific situations Humans are in need of receiving information. These information include, for example, vital parameters, sport performances, warnings of objects they currently do not see etc.
Using the visual sense to convey the information, e.g. by using an optical display, distraction must be minimized as much as possible [1]. The aim of the preliminary study presented in this paper is to gain deeper insights into appropriate representation of information in the peripheral field of vision and to derive optimized concepts for representation of information in the peripheral field of view. These insights should finally be implemented in various practical applications.
Since only one angular degree is perceived via the fovea centralis of the eye [2], all other information that reach the retina are thus perceived peripherally. The main natural task of peripheral vision is the recognition of moving objects and the signaling of danger [3]. The effects that influence peripheral visual performance and the perception of peripheral stimuli have already been studied [4]–[8].
The new to be developed concepts are based on a comprehensive examination of the anatomical and physiological basics of peripheral vision, particularly with regard to optical resolution, movement, cortical magnification, crowding effect, color and shape recognition and contrast sensitivity. Even if some works have been already carried out on this topic, the number of studies that focus on the implementation of peripheral feedback close to the eye is limited. This should be the starting point for further research.

TECHNISCHE UNIVERSITÄT CHEMNITZ

DFG

HYBRID SOCIETIES

Technicalities? Anthropomorphism and social perception

Date

Friday,
July 16, 2021

Time

11:00 - 12:00

Projects

B03/E02

Presenters

Maximilian Bretschneider,
Sarah Mandl

ABSTRACT

In the course of digitalization and automation of working processes, robots have become increasingly common in work spaces. Therefore, concerns regarding the use of robots as well as qualities they should possess to be accepted as 'co-workers' need to be investigated. The Stereotype Content Model differentiates two fundamental dimensions of social perception, warmth and competence. Previous research showed that individuals with disabilities are perceived as warm and incompetent, but using bionic prostheses increases the perception of competence, while cyborgs are perceived as competent and cold. In accordance with Leach et al. (2007), the present study differentiates the warmth dimension into sociability and morality to gain deeper insight in how people with or without disabilities and/or with or without bionic prostheses are perceived. Additionally, we extend our research question to the perception of robots, such as industrial or social robots. In total, N = 338 participants rated eleven visual stimuli of individuals with or without disabilities and low- or high-tech prostheses as well as different kinds of robots in terms of sociability, competence, anthropomorphism, and morality by using a semantic differential scale. First analyses have shown that at least some humane attributions, especially those regarding perceived morality, cannot be adequately attributed to robots. Industrial and social robots did not differ in how anthropomorphized they are perceived, contrary to theoretical constructs. Overall, this study provides a contribution to technological design, which aims to ensure high acceptance with minimal undesirable side effects, both with regard to the application of bionic instruments and robotics.

TECHNISCHE UNIVERSITÄT CHEMNITZ

DFG

HYBRID SOCIETIES

Generation of human-like arm motions using sampling-based motion planning

Date

Friday,
July 16, 2021

Time

11:00 - 12:00

Project

C03

Presenter

Carl Gäbert

ABSTRACT

Natural and human-like arm motions are promising features to facilitate social understanding of humanoid robots. To this end, we integrate biophysical characteristics of human arm-motions into sampling-based motion planning. We show the generality of our method by evaluating it with multiple manipulators. Our first contribution is to introduce a set of cost functions to optimize for human-like arm postures during collision-free motion planning. In a subsequent step, an optimization phase is used to improve the human-likeness of the initial path. Additionally, we present an interpolation approach for generating obstacle-aware and multi-modal velocity profiles. We thus generate collision-free and human-like motions in narrow passages while allowing for natural acceleration in free space.

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HYBRID SOCIETIES

Credibility through non-native language varieties in conversational pedagogical agents

Date

Friday,
July 16, 2021

Time

11:00 - 12:00

Projects

D03

Presenters

Sven Albrecht,
Rewa Tamboli,
Stefan Taubert

ABSTRACT

In stage one of the project, we compiled and systematized features of Chinese English (1), built a baseline TTS system and evaluated possibilities to measure credibility in educational settings involving conversational pedagogical agents (2). We also investigated how to construct a speech corpus by comparing different text selection algorithms (3) as we want to perform linguistic interviews in the next step. The poster presentation will highlight milestones and future directions.

1) Albrecht, S. Features of Chinese Englishes The Current State of Research: This paper argues that there are central features of Chinese English regardless of a speakers Chinese first language (L1) or dialect. The current state of research on Chinese English is reviewed, outlining phonological, lexical, syntactical, prosodic, and discourse and pragmatic features of Chinese English. These features are categorized according to their pervasiveness based on different L1 backgrounds, to show that there are core features of Chinese English. The argument is limited by the low number of quantitative studies and the absence of large scale quantitative studies.
(2) Tamboli, R., Bastian, J., Suren, M., Jahn, K., Rey, G. D. A review about the dialect of pedagogical or conversational agents in different (sub)cultures to gain more insights into the effects of the variation of cultural design features in pedagogical agents' voice, we conducted this review study of existing literature on the role of an accent or dialect of pedagogical agents' voice in different (sub)cultures. The results highlight that only few controlled experiments have been conducted concerning pedagogical agents' accent or dialect. Especially, the cultural matching of the pedagogical agent with the learner´s needs more attention. Our results show several theoretical and practical implications, which strengthen the route for future research.
(3) Taubert, S., Sternkopf, J., Kahl, S., & Eibl, M. A Comparison of Text Selection Algorithms for Sequence-to-Sequence Neural TTS. This work is the first one investigating the effects of text selection algorithms on the quality of sequence-to-sequence neural text-to-speech systems when they are used to create the training set. We compared how the mel spectrograms generated by Tacotron were affected by training sets of different sizes created using one random selection and two greedy selection approaches. The evaluation showed that the outcomes of the random approach varied strongly while the other two selection methods always achieved at least comparable or statistically significantly better results, enabling the use of less training data.

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HYBRID SOCIETIES

CARDINAL: Contextualized Adaptive Research data Description INterface Applying Linked data

Date

Friday,
July 16, 2021

Time

11:00 - 12:00

Project

INF

Presenters

André Langer,
Christoph Göpfert

ABSTRACT

In the publishing process for research data, common user interfaces for gathering descriptive structured metadata traditionally rely on static free-text input elements. This constitutes an obstacle for interdisciplinary, unambiguous, fine-grained data descriptions. Reusing already existing domain-specific metadata models based on semantic ontologies are a more promising approach, but the careful selection and presentation of relevant properties is not trivial. In this research activity, we present the CARDINAL approach, which takes the current research context into consideration to request additional but only meaningful domain-specific characteristics. It generates and presents an adaptive user input interface to the user that allows the structured input of knowledge-domain specific descriptive metadata based on existing ontologies. We show in a proof-of-concept the feasibility of such a contextualized web form for research metadata and discuss challenges in the selection process for relevant ontologies and properties. A web-based survey experiment with 83 participants of varying research domain and expertise shows, that the CARDINAL approach allows to collect additional relevant metadata in a structured way without overstraining the user.

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HYBRID SOCIETIES

Hands free: The evaluation of a newly developed thermal imaging system for firefighters' helmets in virtual reality.

Date

Friday,
July 16, 2021

Time

12:00 - 13:00

Project

A04

Presenters

Sascha Feder,
Aline Püschel

ABSTRACT

In the day-to-day work of firefighters, fast and accurate localization of fire sources is essential for saving human lives and protecting oneself. In rooms with limited visibility due to smoke, a hand-held thermal imaging camera is traditionally used for this purpose. Screening a room with a thermal imaging camera requires active searching by hand movements, which does not correspond to natural human search behavior by head and eye alignment and restricts the firefighter's ability to use the hand for other purposes. As an alternative to the thermal imaging camera, A03 developed a display that can be integrated in the firefighter's helmet and displays the information from a thermal imaging sensor on 16 LEDs arranged horizontally in the user's peripheral field of view (cf. Püschel et al., 2020). In a collaboration of A03, A04 and C01, the impact of different thermal display systems on the fast and accurate localization of fire sources will be evaluated. The investigations will take place in virtual reality (VR) with simulated fire scenes, to achieve a hazard-free testing scenario and to ensure experimental control. For this purpose, the virtual office building previously established in A04 has been extended to include fire source detection and localization tasks under various degrees of visual degradation by smoke.

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HYBRID SOCIETIES

TechnoSapiens: Perceptions and Stereotyping of Bionic

Date

Friday,
July 16, 2021

Time

12:00 - 13:00

Project

B03

Presenters

Maximilian Bretschneider,
Amin Dadgar,
Carsten Rudolph

ABSTRACT

Project B03 aims at a deeper understanding on how merging bodies with technology affects human social interaction. Previous research showed that stereotypes of people with physical disabilities change with the grade of technology of their supporting devices. We analyze the impact of Embodied Digital Technologies, EDTs, for restoration as well as for enhancement by addressing two key questions: 1) Do people treat EDT-users differently compared to non-users? 2) How do EDTs impact the perceptions of self and others? To approach these questions systematically, a range of methods, from explorative qualitative interviews and quantitative surveys to technological laboratory-based research, with a close collaboration between psychology and computer science disciplines, is under construction. While psychologists are to conduct experiments for objective data collection and analysis, computer scientists are to design a virtual reality environment to simulate a complex virtual hand prosthesis in various contexts. We believe the gained knowledge will enhance the development of bionic prostheses and assistance systems. On the one hand, it provides evidence concerning the essential requirements of social acceptance for the EDTs-users. On the other hand, it enables the industry with the solutions which could mitigate the negative impressions and attributions that might exist amongst the EDTs-users and society. Against this background, recent proceedings in developing and implementing the VR environment as well as first results from the qualitative research concerning the users' perspective will be presented.

TECHNISCHE UNIVERSITÄT CHEMNITZ

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HYBRID SOCIETIES

Passivity-based control approaches for telemanipulation

Date

Friday,
July 16, 2021

Time

12:00 - 13:00

Project

C04

Presenter

Stephan Schwarz

ABSTRACT

Remote manipulation transmitted over large distances will enable dexterous manipulation in dangerous situations or in areas that are inaccessible for humans. In general, telemanipulation is realized by a master-slave system, which is remotely controlled by a human operator using a suitable interface. One of the main purposes of this project is to create such a suitable master-slave system, which enables the operator to move the master robot and transmits this movement to the slave. Due to the advantages in control theory, we chose to use the same master and slave system. Both will be realized by a Franka Emika Panda robot, but it is also possible to use different systems, which could be explored in further research projects. The master will be physically connected with the operator and reacts to his motions using appropriate force control. Due to long distances between master and slave, time delay has to be considered. Possible control approaches contemplate the passivity of the system to ensure stability during the execution of the movement. Together with several control approaches, this passivity-based control architecture will be presented in this poster. Furthermore, a force-feedback system has to be implemented to guide the operator through the environment of the slave robot. To support this feedback, an additional sensor/actuator system will be built, that creates the feeling of real physical contacts by real haptics for the remote operator using a new haptic display.

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HYBRID SOCIETIES

Understanding situated machines: An interaction analysis of the social cosmos of embodied digital technologies

Date

Friday,
July 16, 2021

Time

12:00 - 13:00

Project

D04

Presenter

Sabrina Tietz

ABSTRACT

The project investigates the situatedness of embodied digital technologies (EDTs) and looks at their meta-communicative integration into the social world's routines of action and cooperation. The linguistical and behavioral displays of these machines must be able to take into account the social and material circumstances in situation-specific contexts so that an "intelligent action" (Suchman, 2007) in a human-machine cooperation is feasible. The affordance structure of such a machine-design is facing context- and situation-specific challenges in human-machine interactions as these machines must display cooperative capabilities for potential interactions with a human counterpart and for their integration into the everyday world. For the consideration of social circumstances and problems as well as external environmental influences, a machine is required to "explain itself" (Suchman, 2007: 43). Therefore, machine-specific problems of cooperation and understanding – such as their displays of attentiveness and presence – require the machine to simulate cooperative skills as existing possibilities of action only unfold in situations themselves and thus, they do not follow concrete patterns and procedures. The machine's "social displays" (Müller, 2020) must consequently be designed and conceived in such a way that they are accountable to the potential human counterpart and possibilities of action in situ (cf. Suchman, 2007).

TECHNISCHE UNIVERSITÄT CHEMNITZ

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HYBRID SOCIETIES

Conceptualizations in hybrid societies

Date

Friday,
July 16, 2021

Time

12:00 - 13:00

Project

E02

Presenters

Stefanie Meyer,
Sarah Mandl

ABSTRACT

In order to ensure a smooth coexistence between humans and EDTs in hybrid societies, it is necessary to examine the bases for humans and EDTs to coexist together in terms of responsible action. Human-machine interaction can only be ensured in a trustworthy manner if reliable rules exist regarding the responsibility of the respective actors. At this background, we approach the question of responsibility from legal and psychological perspectives. After having identified relevant terminologies to describe hybrid societies from the perspectives of these two disciplines, we now examine which terminological and content-related similarities and differences exist. We aim at developing a broad model consisting of acting entities (i.e., humans, AI, robots), attributes required for responsible behavior (i.e., free will, autonomy), and necessary terms for implementation (i.e., transparency, explainability). This facilitates the classification of what has already undergone (written or implied) regulation in society and what forms the immutable basis for a framework model of responsible behavior. Ultimately, it is inherent in every public community that it follows a concurrent set of moral values, which is usually reflected in legislation. The latter, in turn, also strengthens trust in fellow human beings and fellow entities.

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