Poster Session

Between Euphoria and Skepticism – Perspectives of Social Work on Decision Support Systems

Author: Diana Schneider (FH Bielefeld University of Applied Sciences)

Worldwide, the integration of decision support systems (DSSs) in the everyday practice of social work is still a rather recent phenomenon. Most of the applications can only be found in child welfare systems. Within Germany, however, the discussion about the impact(s) of digitization on social work in general is still in its infancy - hardly to speak of the discussion or the use of DSSs. Nevertheless, the assessments of DSSs vary between confidence and skepticism. Also in Germany, the following questions often arise: If social work has to become more efficient and evidence-based, could this mean losing the holistic view of the needs of vulnerable target groups such as people with disabilities? Could the use of DSSs ultimately lead to a de-professionalization of social work? During my poster presentation I would like to give a short overview about the worldwide assessment of DSSs based on a literature study. At this, I will present the first consideration, which could be a possible cause for the rather skeptical attitude. Furthermore, I will discuss if and to what extent data-driven DSSs could be compatible with a hermeneutic view of social work.

ELSI in the interdisciplinary field: A discussion on how to form a common ELSI framework among different experts - on the subject of information technology and life science

Authors: Tatsuhiro Kamisato (Chiba University) and Mitsuaki Hosono (Gifu University)

The rapid development of information technology in recent years is changing the structure of society worldwide. Similarly, advanced life science is developing and transforming the body itself and the view of life. Recalling that the nature of life is informational, it may be appropriate to proceed with the ELSI review of these areas essentially on a common framework of discussion.

However, considering ELSI in such an interdisciplinary field may be more difficult than in a specific field. This is because even experts in different fields usually hold different social issues and different perspectives on citizens, users, and consumers. So it is expected that the issues that cause friction with the general public will spread, making constructive discussion difficult.

Therefore, in order to conduct TA activities involving public participation on interdisciplinary issues, it would be beneficial to first establish a common recognition frame for ELSI among concerned experts from different fields. In other words, the idea is to establish a common base for experts in various fields of science and technology at the initial stage, and then conduct TA activities with public participation. This is a "two-stage TA model", which we suggest.

In this study, we apply this "two-stage TA model" to the boundary area between information technology and life science as a concrete example, and consider how to appropriately consider ELSI in the interdisciplinary field. In particular, we would like to propose a specific methodology for how experts with different specialties can develop a common ELSI discussion framework.

Developing a health-related understanding of lifestyle direct-to-consumer genetic testing by users

Author: Wiebke Sick (Institute of Medical Sociology, University Hospital Center Hamburg-Eppendorf)

Direct-to-consumer genetic testing (DTC-GT) for medical purposes is strictly regulated in Germany and requires medical supervision. Still, commercial companies offer DTC-GT without an explicit medical purpose, for example to improve diet and physical activity. Based on the analysis of single-nucleotide polymorphisms of a DNA, this lifestyle DTC-GT promises insights to an individual metabolism and exercise type and recommendations for diet and exercise, mainly to lose weight. Usually, the DTC-GT is distributed by so-called consultants, e.g. personal trainers, nutritionists or non-medical practitioners. A qualitative study based on narrative interviews with consultants and users showed that they develop forms of understanding of lifestyle DTC-GT which often differ from the interpretation and application of the results offered by the providing companies. Strikingly, the legal and advertised purpose is not adopted by all users. Instead, an own frame of orientation in using the lifestyle DTC-GT is applied. The practice of using a lifestyle DTC-GT relates to medical practice making a differentiation between medical and lifestyle genetic testing for the users indistinct. Consequently, the narrow purpose of the DTC-GT is extended to a wider scope including the management and improvement of the own health situation. Not only are the results interpreted in a different manner, new forms of utilization of the results are also applied. These forms range from using the DTC-GT as a basis for living a good and healthy life to using it as a measure of prevention or even as a diagnostic tool in a quasi-medical context.

Participatory Methods in Fostering Responsible Research and Innovation: The Case of Nanotechnology

Author: Łukasz Nazarko (Bialystok University of Technology)

The poster presents the methodology and selected results of a EU-supported project entitled "NANO2ALL – Nanotechnology Mutual Learning Action Plan For Transparent and Responsible Understanding of Science and Technology".

The aims of the project included: (i) the enhancement of interaction between wider society and the nanotechnology research and innovation community, (ii) identification of knowledge gaps, positions, needs, expectations and concerns of various stakeholder groups vis a vis nanotechnology development, (iii) contribution to more responsible policy-making at the EU-level with regards to innovation in nanotechnology.

The poster focuses on the three stages of the engagement process within the project: citizen dialogue workshops, national multi-stakeholder dialogue workshops and European multi-stakeholder dialogue. The first two types of events took place in 2017 in France, Italy, Israel, Poland, Spain and Sweden. Project partners in each country were assigned one of the three topics: 1) nano-textiles, 2) nanomedicine and 3) brain-Computer Interactions. The European multi-stakeholder dialogue took place in 2018. It focused on the issue of the responsiveness of the nanotechnology research and innovation system to the signals for the wider society.

The presented case is an example of how engaging citizens and other stakeholder groups could be implemented to facilitate the alignment of the technological development with societal values and priorities.

Trust in Technology – Measurement Perspective

Author: Joanna Ejdys (Bialystok University of Technology)

In the period of dynamic development of technology and increasing human dependence on technology, trust in technology becomes particularly important. Trust is the result of expected or experienced characteristics of the technology and environmental factors, an inclination of the technology user to rely on the technology in a situation of potential risks associated with its use, determining the intentions for the future use of the technology. Trust is one of the important factors determining the level of technology acceptance, often reflected in theoretical models. Trust is seen as one of the success factors ensuring an effective adoption of technologies (Lippert & Davis, 2006). Trust has particular importance under conditions of uncertainty, the unpredictability of development and increasing human dependence on technology. Trust is also an important way of reducing risk and uncertainties related to the adoption of technology (Kim et al., 2008; Pavlou, 2003; Hernández-Ortega, 2011).

The article will present the methodology of building a model of measuring trust in technology. The methodology reflects process approach to trust management. Trust measurement is understood as not only as an analysis and evaluation of the factors determining the level of trust (inputs and outputs to the trust process), but as an analysis and evaluation of the variables on which trust can influence (process outputs). Seven stages have been distinguished in the developed methodology:

- Stage 1: Defining the type of technology analyzed
- Stage 2: Defining a category of trust
- Stage 3: Identification of control variables to the model of trust measurement
- Stage 4: Determination of input variables (determinants)
- Stage 5: Determination of trust characteristics
- Stage 6: Identification of output variables
- Stage 7: Construction and evaluation of the measurement model.

The poster will also present an example of the application of methodology in relation to e-declaration technology.

Technology assessment using the Multi-Attribute Decision-Making Method

Author: Katarzyna Halicka (Bialystok University of Technology)

Innovative technologies are increasingly determining the competitive advantage of enterprises. They also form the basis for modern manufacturing processes, enabling to meet the needs of the society. The awareness of the need for technologic development has become widespread, which is confirmed by international and national programmes, scientific and research activities as well as emerging institutions. Considering the increasing demand for innovative technologies and the developed market, it appears important to use specific methods and tools for effective analysis and selection of technologies.

This poster presents a proposal to use multi-attribute decision-making methods in the process of technology assessment and selection. The proposed concept combines an S-life-cycle analysis (S-LCA), which determines the performance of technology, the method of Technology Readiness Levels (TRL), which examines the technology maturity, and the TOPSIS method, which allows developing a technology ranking. To verify the approach, an example of a ranking and selection of the best road

technology in Poland is presented, considering the proposed set of criteria and sub-criteria. In the technology assessment, the criteria for innovation, competitiveness and usefulness of the technology were used in addition to S-LSA and TRL methods.

Technology Assessment as Support in the Decision-Making Process for Modernizing Critical Communication Technologies Used by Public Safety Agencies in Brazil

Authors: Débora Vanessa Campos Freire and Ana Clara Cândido (Federal University of Santa Catarina)

Critical Communication (CC) systems are one of the main support tools for Public Safety (PS) agencies. This work is an exploratory and descriptive applied research with both quantitative and qualitative approaches. It focuses on user and expert requirements capture, based on understanding the activity system's context as a resource. The collected data were analyzed using Bunge's (2000) Systemism in order to propose a system with the logic of Composition-Environment-Structure-Mechanism (CESM). A theoretical framework was built, regarding resource information on Activity Theory (AT), to include the user's context in social, cultural and psychological aspects, and Usability, in order to identify methods of data collection. Secondary data were obtained through a Systematic Literature Review (SLR) and a bibliographical review. Primary data were obtained from interviews and data treatment based on AT, Mwanza's (2001) stages and Mello & Neves's (2018) contributions. Were also applied questions based on Usability methods and techniques, such as Jordan's (1998) concepts and System Usability Scale (SUS), 30 users and experts were consulted.

This work aims to support the development or improvement of CC systems, based on the results from the Technology Assessment (TA). TA uses a variety of data sources to create a single information system, which aims to point out the best path of investments.

The SLR disclosed several types of TA, but none applicable to CC systems. Therefore, it was necessary to develop a new methodology, proposed in this work as a series of steps to be followed. The "Six-step model" was created.

Evolution of Technology: A Case Study of Outer Space Applications

Author: Pratik Patil (Vienna University of Economics and Business)

In recent years, private companies have started to aggressively commercialize space technologies. Advent of the reusable rockets implies significant cost reduction and opens possibilities for the dramatic acceleration of space-based applications. Trends in the commercialization of space technologies are analogous to the preceding/current technological cycle of ICT applications whereby public investment in R&D was followed by the commercial applications upon technological maturity. Commercial exploitation of space is seen as an essential component of perpetuating the economic growth engine by the influential actors such as the Blue Origin founder Jeff Bezos.

This work analyses the evolution of space technology with respect to its contingency on the social structures. Critical realist framework is applied to understand how application of technology is driven by the underlying causal mechanisms and structures. It is observed that even though technological paradigm typically originates from the exploration and co-operation-oriented motives and mechanisms, its trajectory is appropriated by the exploitation and competition-oriented applications due to the influence of contemporary social structures (e.g. regulations, short-term profit motive,

and social norms). Applied technology in return ends up consolidating existing hegemonies and inequities. This underscores the importance of ex-ante “orgware” (regulations for the generation and application of technology, as defined by IIASA) to direct the evolution of technology as an exigent vector to augment hardware and software. Proactive regulation is crucial to prevent a new space race with unbridled commercial exploitation that would entrench and deepen existing global inequalities.

Empowering neuroethical discourse with participatory methods

Author: Ludwig Weh (Humboldt University Berlin) and Christopher Coenen (Institute for Technology Assessment and Systems Analysis)

Advances in neurosciences potentially change the social and cultural self-conception of people and their notion of (mental) health and physical integrity. Methods based on critical-normative discourse analysis can assess possible, probable and preferable change from an ethical point of view: How do personal narratives reflect emerging neurotechnologies, and how willingly do people welcome these advances in their embodied realities? How can futures-oriented action research foster accessible, mindful, scientifically informed debate? We aim to showcase a participatory study design facilitating discourse between stakeholders of (1) science and (2) society backgrounds to assess an exemplary debate on preferable developments in the field.

Implementing these considerations in a practical context, the EU ERANET NEURON-ELSA project ‘FUTUREBODY – The Future of the Body in the Light of Neurotechnology’ combines art-inspired formats with participatory debate about the critical impact of emerging neurotechnologies on human corporeality. With our conference poster, we aim to present a related exemplary design of discourse analysis with respect to ethical, legal and societal aspects (ELSA) as a central element of research on techno-social visions, in line with the approach of ‘vision assessment’ developed at the Institute for Technology Assessment and Systems Analysis (ITAS) within Karlsruhe Institute of Technology (KIT). Our poster discusses key details of a possible workshop setup and depicts specific steps and structure of a discourse-analytical approach. This proposal may become relevant in the FUTUREBODY project and beyond, leading to a fruitful combination of methods and approaches used in future studies and technology assessment.