Cookie Banners and Trust: UX design for privacy policy and trust

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Cookie consent banners are mandatory for most websites because of the introduction of the General Data Protection Regulation (GDPR) in the EU. Cookie banners often apply persuasive user interface (UI) design elements nudging users to consent to data storage without reading the consent notice to reduce the interruption of the user flow. This study investigates if persuasive UI elements like dark and white patterns affect user experience and trust. We conducted an online experiment with 56 participants comparing the effects of a non-persuasive cookie banner vs. two types of dark patterns vs. a white pattern design that nudges users into denying data tracking. The results revealed that dark patterns lowered the users' positive emotions. The white pattern led to more positive emotions. When considering the user's affinity to technology, the UI design affected usability and usefulness. Persuasive design patterns affected the participants' trust when UX and their affinity to technology were considered. The results indicate that dark patterns reduce User Experience. However, trust does not seem to be affected by UI design. Based on the results, we conclude that users may be sensitive to UX design features, UI design alone does not affect user trust.

Risky decision making due to goal conflicts in firefighting – debriefing as a countermeasure to enhance safety behaviour

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Firefighters act within extreme environments often under threatful conditions and are repeatedly exposed to goal conflicts (e.g., self-protection vs. mission objective) during missions. But what are the consequences of the experienced safety and task goal conflicts, and which countermeasures could help to reduce the occurrence of these conflicts? In an online-survey 336 firefighters were asked about experienced goal conflicts, risky decision making, debriefings and the frequency of difficulties in teamwork during firefighting. Hypotheses were analysed with multivariate regression and mediation analyses. Data shows that goal conflicts lead to risky decision making and unsafe acts. Debriefings lead to less goal conflicts mediated by less frequent difficulties in teamwork (communication, leadership, shared mental models). Results indicate that debriefings are a valuable tool to reduce difficulties experienced in teamwork in missions and can therefore have an impact on the experience of goal conflicts. Less goal conflicts lead to less unsafe decisions and thus a safer working environment. It can be recommended to conduct debriefings after missions, with an increased focus on team aspects.

Supervising Highly Automated Shuttles: A Case Study of On-Board Operators' Workplaces across Three Real-World Laboratories

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A safer, eco-friendlier, and more inclusive mobility could be achieved with highly automated vehicles (HAVs). Across Germany, a plethora of real-world laboratories with highly automated shuttles providing

novel mobility solutions in real-world settings has been implemented recently. However, technological and legal restraints required a steward on board of the HAV in all of them. The on-board operator's task was overseeing driving operations and intervening if necessary, i.e., when the automation's capability did not suffice to maintain safe operations. Three HAV projects are presented as case studies focusing on the on-board operators' workplaces, their tasks, typical scenarios, and interactions with the driving automation to resolve these scenarios. After analysing the operational contexts, structured interviews with on-board operators were conducted. Additionally, observations of HAV operations in the supervised shuttles were carried out. Results showed a highly similar task structure of on-board operators across the different contexts despite striking differences regarding the HAVs' capabilities of automation and frequency of manual interventions. In addition, the setup of workplaces varied substantially, particularly regarding the transparency of the automation's decision-making process and ways to interact with the automation. Implications for designing on-board operators' workplaces from a Human Factors perspective and related research will be discussed.

Deep learning for human posture classification in safety critical areas

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Human Activity Recognition (HAR) is a research area, which deals with automatically identifying human movements from a variety of sensor data. HAR is exploited in the field of human-computer interaction such as social care [1] or industrial settings [2], since it acts as a powerful tool to understand human movements and proactively supports them with dynamic feedback. In the past, traditional machine learning approaches, with manual feature extraction, have been used for HAR problems [3, 4]. However, these methods require domain knowledge and may hinder generalization performance [4]. Therefore, deep learning methods provide an efficient way of automatic feature extraction without any domain knowledge [3, 4].

One potential application of HAR could be automatic detection of motion states in control rooms. For instance, HAR could be utilized as input for adaptive user interfaces, thus evaluating and optimizing human computer interaction. Another potential application could be the control of a robot swarm [5]. The following study provides a first approach for HAR in safety critical areas. Therefore, an individual setting for data acquisition was designed for recording motion data from five defined postures (sit, stand, lie, walk, or kneel). As a second step, a neural network, based on supervised learning, convolutional and long short-term memory (LSTM) recurrent units, was trained to classify these postures. The network uses motion-tracking parameters (joint angles) as input, acquired from IMUs of XSens MVN Awinda.

References

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