

**Johann Habakuk Israel /
Christian Kassung / Jürgen Sieck (Hrsg.)**

Kultur und Informatik

Extended Reality

vwh

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^{**} Humboldt-Universität zu Berlin

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Preface

Culture and Computer Science 2020 – Extended Reality

Fifteen years ago, the media theorist Lev Manovic provided a preview of our present-day media situation by coining the idea of “augmented space”. For Manovic, this has been a space in which we act between various “layers” of dynamic information that are localised and personalised for each user (Manovich 2006: 226). Among the layers, we can imagine today, for example, various social networks or other programs that work with GPS-based and personalised information that users can access via mobile devices.

Furthermore, and Manovic could not have foreseen this, these layers are getting more and more hybrid by themselves. In Manovic’s “augmented space”, these information layers only complement space. There is still a clear distinction between real space and additive data. Yet with the step from Manovic’s vision of an “augmented space” to today’s “augmented reality”, virtual content is getting more and more seamlessly integrated into the perception of the real world. Even if the technology is not yet ready for low-threshold and ‘invisible’ integration into daily life, it probably will be in the near future. At present, there are already cutting-edge technologies like smartphones or Microsoft’s HoloLens well on their way to making this technology suitable for mass production. Human perception is thus expanded, and new spaces of communication and interaction are created.

Going one step further leads to the concept of extended reality. As an umbrella term, extended reality refers to all kind of human-machine interactions being generated by computer and media technologies. However, extended reality not only addresses the whole range of technologies from augmented and mixed to virtual reality. Extended reality means all current as well as future technologies. It is a media-technological concept,

in which the digital and the material worlds not only interact but are becoming fundamentally indistinguishable.

Hence, extended reality is a research field that needs a significant degree of interdisciplinarity. Not only designing and building these technologies, but also questioning their impact on subjects living in such hybrid worlds, is a task that requires the cooperation of several disciplines. These include, for example, human-computer interaction, computer graphics, sensor systems, psychology, machine-to-machine communication, cultural studies, and design.

Against this background, this year's 18th International Conference on "Culture and Computer Science" aims to address the multifaceted technological and cultural bridges between reality and virtuality and the merging of both. Due to the Corona crisis, no conference could be held in Berlin this year. Nevertheless, this anthology provides an extensive overview of best practice applications of information management, communication, interaction, visualisation, mixed, augmented and virtual reality, audio technology, multimedia, streaming and data processing, and design within a specific cultural context. The authors of this international volume analyse, demonstrate and discuss current research strategies and developments around "Extended Reality". Our thanks go to the members of the international programme committee for their assistance in reviewing more than 50 submitted manuscript. Three different members reviewed each submission and selected 20 papers and six invited papers for this volume. This edition of the series "Culture and Computer Science" was only possible with the continuous support of the Hochschule für Technik und Wirtschaft Berlin and the Humboldt-Universität zu Berlin.

Our special thanks go to all authors, without whose creativity, ideas and hard work it would not be possible to run an international conference and to produce these interesting and inspiring proceedings.

Finally, this and all previous conferences "Culture and Computer Science", as well as this publication, would not have been possible without the commitment of the staff and colleagues of our research group INKA at the

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Johann Habakuk Israel, Christian Kassung and Jürgen Sieck

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