

Invidis consulting

Digital Signage Conference



19 - 21 September 2012
Kempinski Hotel Airport Munich

Date

- 19th – 21st September 2012
- Main Conference day: 20 September 2012

Location

- Kempinski Hotel Airport Munich
<http://invidis.de/munich-digital-signage-conference-2012/location/>

Speaker Information

Company:	Johannes Kepler University of Linz
Speaker:	Univ. Prof. Dr. Alois Ferscha
Presentation title:	Attention Recognition What digital signage systems can know about the attention of their passerbys.

Presentation synopsis:

In media-rich living spaces (like cities of the future, urban and rural living residencies, virtual societies, etc.), where thousands of people are overflooded with signals and messages at all levels of perception and modalities (visual, auditory, tactile, olfactory), the (i) dynamics of individual attention and the (ii) emergence of collective attention appear to be among the most demanding challenges of the information society. It is of high interest to understand how spontaneous, local, **human attention** raises, propagates and eventually fades among large populations and society itself.

Formalizing human attention is extremely difficult, since it not only involves evidence based research (like the analysis of measurable, indicative signs of attention), but also theory based research of human cognitive capacities. While over the past decades, research has succeeded in establishing several attention theories (e.g. the Single Channel Theory, Feature Integration Theory, Perceptual Load Theory, Capacity Theory and Multiple Resource Theory) and reference models (e.g. the SEEV model), the operative knowledge of the physiological mechanisms and neural processes of attention and its relation to perception, cognition, response, memory, learning, and decision making is still in its infancy.

Recently, Digital Signage Systems (DSSs) have emerged employing embedded sensor technologies for

automated context recognition and content scheduling. With our SmartLight public display we have shown how the recognition capabilities of DSSs can be extended to capture (i) presence, distance, moving direction, estimated age, estimated gender and body mass of bypassers, to (ii) relate this information to location, time of day, weekday, day of year, temperature, noise and light level, etc., and to (iii) use this information to control content playback. While now our SmartLight DSS is able to relate content (commercials, news, etc.) adequately to given (recognized) situations, ultimately we are interested in targeting the viewers attention.

Towards this end, we have developed an automated attention estimation mechanism based on an passersby effort analysis. Capturing movement, body pose and gestures via depth image sensors, we employ a pattern recognition chain classifying different levels of attention in real time, i.e. while a passerby encounters a DSS. The output of the analysis of a single viewer encounter is an attention rank, to be used as an element of interaction control, or later on for billing and management purposes.

We identify a whole new category of potentials for future **Attention Aware DSSs**, among them being (i) a thoughtful and adequate delivery of information, respecting interest and human cognitive capacities, (ii) a revolutionary change to the principles and architectures of Digital Signage Software and CMS systems, and (iii) attention rank based billing models (comparable to hits/pageviews/impressions based billing models in online advertising systems) for the out-of-home advertising business.