Augmented Reality: "The Next Big Thing"
Master Seminar SS2017

David Harborth, M.Sc.
Chair of Mobile Business & Multilateral Security
Goethe University Frankfurt

Agenda

I. Organization

II. Grading and Formal Rules

III. Expectations and Support

IV. Introduction to Augmented Reality

V. Topics

VI. Distribution of Topics

- Registration
  - Registration and resignation are possible within the period of 13th to 26th of April 2017
  - Signing will be done after distribution of topics
  - After 26th of April, resignation leads to a fail of the whole seminar

- Contact
  - All questions to david.harborth@m-chair.de

  - You will always get a personal appointment ASAP, since a regular exchange is important for a very good work (arranged by mail)

  - All relevant information will be published on www.m-chair.de

I. Organization

Date	What	Where/How
26.04.2017, 10am – 6pm	Introduction and Distribution of Topics	RuW 2.202
21.06.2017, 1pm	Seminar paper submission	Sekretariat, RuW 2.257 **and** digitally via e-mail
23.06.2017, 5pm	Presentation submission	E-mail
27.06.2017, 10am-6pm	Presentations (Day 1)	RuW 2.202
28.06.2017, 10am-6pm	Presentations (Day 2)	RuW 2.202

1. Agenda will be sent to all participants prior to the presentation days.
2. From 13.-20.05. & 03.-17.06., I will be not available for personal meetings

- Course assessment

  - Based on your seminar paper (60%) and presentation (40%)

  - Each partial requirement needs to be passed with a grade of 4.0 or better

- # Seminar paper
  - ~20 pages
  - Use the template on https://m-chair.de/index.php/teaching/theses, but with citations formatted with the APA style
- # Deadline for submission: 21.06.2017, 1pm
  - Provide the printed version to Elvira Koch, RuW 2.257
  - Send the digital version to david.harborth@m-chair.de

II. Grading and Formal Rules

- ## Seminar presentation:
  - Duration: 15 min. at most
  - Following discussion: 15 min.

- ## Submission until 23.06.2017, 5pm
  - Powerpoint format
  - E-mail to david.harborth@m-chair.de

III. Expectations and Support

- ## We expect from you:

  - Motivation, dedication and rigor when working on your seminar

  - Engage in discussions when preparing your paper and especially during the presentations days

  - Ask questions and be curious

  - Understand the used methodology and try to become an expert for it

- How we want to support you:

  - Opportunity to exchange ideas on a regular basis

  - Honest feedback and strong interest in your work

  - Offering of three workshops (they are **not** mandatory!)

- Workshops
  1. How to present (will be offered directly after the topic distribution today)
  2. How to write a literature review
  3. How to conduct qualitative research

  → Workshops outline important concepts and guidelines and provide a first insight to the topic, **without** claiming to be exhaustive
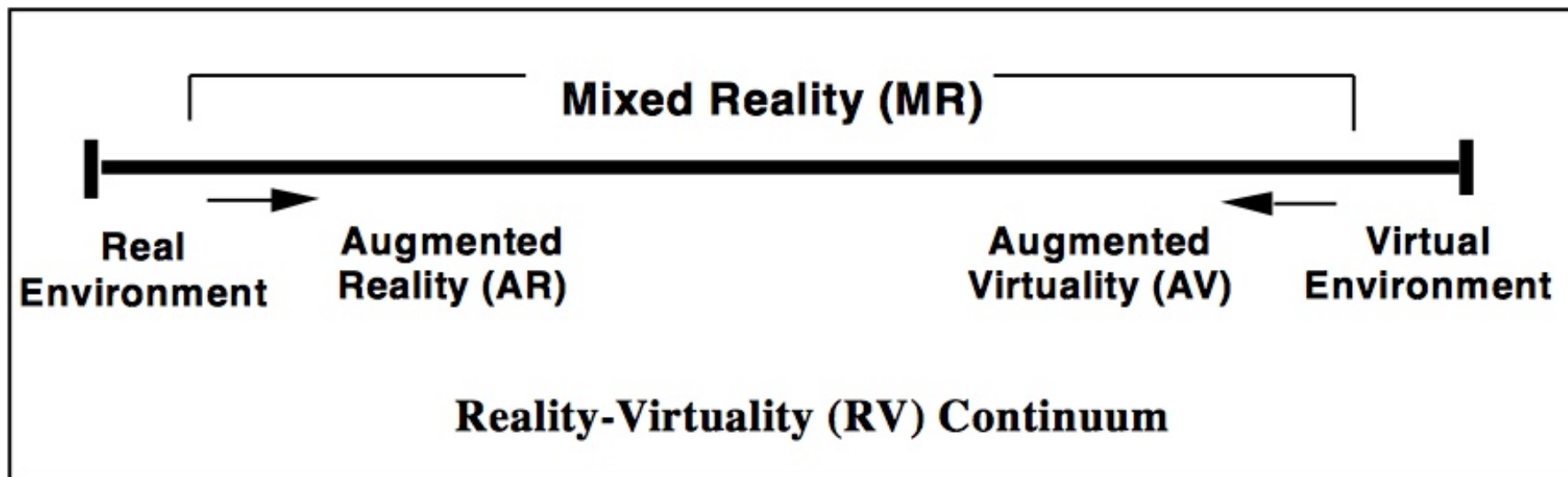
- Definition by Azuma et al. (2001):

  "[…] an AR system […] combines real and virtual objects in a real environment; runs interactively, and in real time; and registers (aligns) real and virtual objects with each other" (p. 34).

  → important difference to virtual reality (VR): VR immerses users in a totally virtual environment; visual senses controlled by the system

Source: P. Milgram, H. Takemura, A. Utsumi and F. Kishino: "Augmented reality: A class of displays on the reality-virtuality continuum," Proc. SPIE Conf. Telemanipulator and Telepresence Technologies, vol.2351-34, pp.282-292,1994.

IV. Introduction to Augmented Reality (AR)

Source: http://abcnews.go.com/GMA/video/exclusive-apple-ceo-tim-cook-prefers-augmented-reality-42068573

Results of a Systematic Literature Review on AR in IS research (Harborth 2017)

→ shows promising research gaps to investigate in future work

Focus Domain of Application	Technology	User Behavior	Total
Browser	Langlotz et al. 2013, *MacIntyre et al. 2011 (2)*		3
Collaboration/ Communication	Billinghurst et al. 2002, Brockmann et al. 2013, *Zhong et al. 2001 (19)*	Djamasbi et al. 2014, *Billinghurst et al. 2002*	23
Commerce/ E-Commerce	Nguyen et al. 2012	Kumar et al. 2016, Ross & Harrison 2016, *Olsson et al. 2013*	4
Construction/ Manufacturing	Biocca et al. 2007, Biocca et al. 2006, Caudell & Mizell 1992, *Klinker et al. 2001 (2)*	Saggiomo et al. 2016	6
Education/ Learning	*Cooperstock 2001 (14)*	Deng & Christodoulidou 2015, Salvador-Herranz et al. 2013, Shatte et al. 2014, *Arvanitis et al. 2009 (6)*	23
Gaming	Piekarski & Thomas 2002, *Thomas et al. 2002 (4)*		5
Geography/ Travelling/ Navigation	Huang et al. 2012, *Feiner et al. 1997 (10)*	Adelakun & Garcia 2015	12
Health	Scharver et al. 2004, Weghorst 1997, *Bajura et al. 1992 (4)*	Zahedi et al. 2016, *Nilsson & Johansson 2007 (3)*	10
Home-Entertainment	Jones et al. 2015	Ernst et al. 2016, *Rauschnabel et al. 2015*	3
Maintenance	Feiner et al. 1993	Krishna et al. 2015, *Tang et al. 2003 (2)*	4
Military	*Livingston et al. 2011 (9)*	Hix et al. 2004	10
No specific domain	Azuma 1993, Roesner et al. 2014, Tatham 1999, *Billinghurst & Lee 2012 (34)*	*Swan II & Gabbard 2005 (6)*	43
Total	114	32	146

- Can be roughly divided by methodologies used and naturally by topics

  - Literature reviews
  - Quantitative research
  - Qualitative research

- Work out the historical development of AR based on a systematic literature review and think about the following issues:
  - Major technological advances over time (theoretical ideas vs. prototype vs. market entry)
  - Terminologies
  - Changing predictions w.r.t. to the potential of the technology

- Explore the current situation about standardization of AR technologies (software/hardware) and provide and overview and outlook based on your results

  - Are there individual standards in place?

  - What are current standardization efforts?

  - Who drives these efforts?

  (See Perey et al. (2011) for an overview on AR with mobile devices)

- Study current use cases of AR in the business context and derive future possible areas of application
  - Firms start to use HMDs in their manufacturing process (e.g. http://www.wirtschaft-regional.net/weidmueller-interview-maschinenbau-ist-der-vorreiter-der-digitalisierung/#more-41520)
  - What firms and what processes? How is AR improving work processes? Is it quantifiable? What are further fields for the future?
  - Gather knowledge based on scientific publications as well as the press; if possible try to get information from firms

- Review the use and conceptualization of the concept 'Consumer Innovativeness' in the IS, marketing and management literature

  - meta-analysis of the different constructs and their relationships in models

  - Think about new conceptualizations (e.g. 2nd order constructs of existing innovativeness constructs)

  - Good starting point: Manning et al. (1995)

- Which role do users' privacy concerns play in adopting AR technologies?
  - Develop a questionnaire which operationalizes different dimensions of privacy concerns
  - Consider and analyze which data types are accessed and processed by current systems
  - Differentiate privacy and security issues with AR systems

- Predicting the future of AR - Analyze M&A activities based on a quantitative study and try to map the current customer base to the Diffusion of Innovation Cycle

    - Websites like Crunchbase (https://www.crunchbase.com/#/home/index) provide access to data on financing rounds, volume etc.

    - Gather such kind of data and try to address the question of whether the success of innovations in general and particularly AR can be predicted

- **Investigate users of Pokémon Go (former players and active ones) with regard to**
  - Motives to play the game (e.g. fond memories of playing the game in the past) and why they stopped (for the ex-players)
  - Users' characteristics (trait theory - BIG FIVE INVENTORY (BFI) cf. John and Srivastava 1999)
  - Each student uses the same semi-structured questionnaire (developed directly at the beginning of the working time within the group of students who chose the topic)
    - Each student writes an independent paper
    - N= min. 5 interviews between 30 and 60 minutes

1. Historical Development of AR (LR)
2. Standardization of AR technologies (LR)
3. AR use cases in B2B context (LR)
4. Consumer Innovativeness (LR)
5. Role of Users' Privacy Concerns (Quant.)
6. Prediction of the future of AR based on M&A activities (Quant.)
7. - 12. Investigation of Pokémon Go Players (Qual.)

References

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- Manning, K. C., Bearden, W. O., and Madden, T. J. 1995. "Consumer Innovativeness and the Adoption Process," *Journal of Consumer Psychology* (4:4), pp. 329–345 (doi: 10.1207/s15327663jcp0404_02).

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Deutsche Telekom Chair of Mobile Business & Multilateral Security

David Harborth
Goethe University Frankfurt
E-Mail: david.harborth@m-chair.de
WWW: www.m-chair.de