

Příloha 7: Posudek oponenta habilitační práce

Masarykova univerzita

Fakulta

Fakulta informatiky MU

Habilitační obor

Informatika

Uchazeč

Fotios Liarokapis, Ph.D.

Pracoviště

Fakulta informatiky Masarykovy univerzity

Habilitační práce

Interactive Virtual and Augmented Reality Environments

Oponent

doc. RNDr. Andrej Ferko, PhD.

Pracoviště

Fakulta matematiky, fyziky a informatiky Univerzity
Komenského v Bratislave

Text posudku (rozsah dle zvážení oponenta)

THE HIGHLY POSITIVE REVIEW IS ATTACHED (2 PAGES).

Dotazy oponenta k obhajobě habilitační práce (počet dotazů dle zvážení oponenta)

1. WHAT ARE THE KEY OPEN PROBLEMS IN SERIOUS GAMES?
- 2.

Závěr

Habilitační práce Fotios Liarokapis „Interactive Virtual and Augmented Reality Environments“ splňuje – ~~nesplňuje~~ požadavky standardně kladené na habilitační práce v oboru Informatika.

Bratislava, dne... 29. AUG. 2015

Andrej Ferko

Fotis LIAROKAPIS, PhD.

Interactive Virtual and Augmented Reality Environments

Brno: Masaryk University, March 2015

Author of the thesis is employed at Masaryk University and he presents the habilitation thesis in a form of a well organized collection of research papers. Such a form is legal in Czech Republic. Multiple results were achieved during the UK academic career of Dr. Liarokapis (Sussex, London, Coventry). The conference and journal papers were written in the years 2004-2014. "The goal of this thesis is to illustrate the most significant results in the area of interactive virtual and augmented reality", p. 4.

1. Identification

The reviewed version consists from 7 plus 39 continuously numbered pages and 16 paper reprints. They are interleaved using 16 title pages with bibliographic record for the following reprint and the indication of authors contribution. The last numbered page 212 is followed by 16 pages of reprinted Paper #16. In total, there are 235 pages, 7 numbered with Latin numbers and 228 pages, numbered either consecutively or preserving the published pagination. These are subdivided in 8 chapters as follows: 1 Introduction (pp. 1-4), 2 Procedural Modelling (5-9), 3 Virtual and Augmented Reality Interfaces (10-16), 4 Interactive Environments (17-21), 5 Application Domains (22-30), 6 Conclusions and Future Work (31), 7 References (32-37, 63 items), and Chapter 8 Appendix – Paper Reprints (38-228). The thesis introduces, describes, and documents original publications and research conducted with multiple coauthors. The single paper contributions are commented at pages 39, 48, 53, 62, 67, 72, 86, 108, 125, 138, 145, 155, 165, 174, 190, 212. They vary from 100% to 10%, 42,8125% in average (40%, 30%, 30%, 80%, 15%, 70%, 100%, 50%, 30%, 30%, 40%, 30%, 90%, 10%, 20%, 20%). At higher level, the results belong to four areas **Procedural Modelling**, **Virtual and Augmented Reality Interfaces**, **Interactive Environments**, and **Application Domains** (Virtual Archaeology, Urban Navigation, VR and AR in Education, Serious Games).

In Chapter 1 Introduction, there are briefly introduced motivation, background and basics for VR, AR, Procedural and Crowd Modelling, Serious Games, Human Computer Interaction, Goal and Overview. Chapter 2 is focused to Procedural Modelling Results in Terrain Environments, Buildings and Cities, and Crowd Behavior Simulation. Chapter 3 Virtual and Augmented Reality Interfaces presents Indoor, Mobile, both VR and AR interfaces. Chapter 4 offers an overview of Interactive Environments of three types: Multimodal, Wireless Sensor Network Based, and Brain-Computer (these papers are most recent within the thesis, 2014). Chapter 5 Application Domains contextualizes research achievements in Virtual Archaeology, Urban Navigation, three papers in Education, and two ones in Serious Games. Chapter 6 draws Conclusions and Future Work. Among 63 references, there are 17 coauthored by Dr. Liarokapis.

2. Originality, Scientific Quality

While Virtual reality (VR) offers imagination, immersion, and interaction, Augmented reality (AR) “provides a simple and immediate user interface to an electronically enhanced physical world” [Schmalstieg — Höllerer 2015]. The basic principle of augmented reality (AR) is to superimpose digital information directly upon a user’s sensory perception [Feiner 2002], rather than replacing it with a synthetic environment as VR systems do. Thus “AR has the potential to become the leading user interface metaphor for *situated computing*” [Schmalstieg — Höllerer 2015].

The meaning of research in VR and AR is targeting the everyday communication experience, filtering the information pollution, both enriching and saving the time of human life for each user. In other words, this VR/AR research is of crucial importance. Therefore the dedicated journals and conferences (EG, CGF,) evaluate the originality of each contribution. In the case of the content of the habilitation thesis, there is no doubt concerning its originality or international quality.

The author has an excellent orientation in the field, he coauthored even several prominent survey papers. In research papers, he masters recent methodology and original interdisciplinarity (terrain modeling... brain-computer interface (BCI)). The BCI and serious games research link seems to be the most promising. It seems useful and prospective to develop the ideas from habilitation thesis into a unique monograph...

3. Correspondence and Recognition

The habilitation thesis submitted corresponds to Computer Science branch of study (oboru habilitácie Informatika), it is both highly actual and relevant with respect to the current state of the art in VR and AR. The vast majority of reviewed text was successfully published with leading world publishers. The conference papers are preliminary versions of future journal papers, as noted by the author. The remarkable citation count (documented elsewhere, in accompanying materials from MU Brno) gives an evidence that this author and his ideas deserve attention and are very vital and inspiring. These numeric parameters would qualify dr. Liarokapis for an academic degree professor according to criteria at multiple universities in Central Europe. (At the excellent level can be seen his project and educational results, as well.) Fotis LIAROKAPIS, PhD. is an internationally recognized, original, creative personality with rich educational and scientific life organizing experience.

4. Conclusion

To conclude, based on the above evaluation, I propose the habilitation committee in Computer Science (Informatika) at Masaryk University in Brno in accordance with the relevant law of Czech Republic **to accept the habilitation thesis by Fotis LIAROKAPIS, PhD.** and admit him to the pedagogic qualification docent. In other words, I support explicitly the naming him for docent academic degree in computer science at Masaryk University in Brno.

Bratislava, August 29, 2015