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**Journal of Computing and Information Science in Engineering | Volume 11 | Issue 4 | Guest Editorial**

Guest Editorial

# Special Issue on Driving Simulation

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### ARTICLE

These last years have witnessed the advent of several high performance driving simulators at automotive companies and universities all over the world as well as a large use of low-cost simulators for a growing number of human factors, vehicle engineering, road traffic, and training applications. The rendering capabilities and applicability of driving simulators thus became a crucial issue both for simulator makers and users. Both areas are multidisciplinary as for correct motion rendering human perception characteristics of the driver are to be taken into account. The idea of bringing together computer scientists with physiologists of visual and kinesthetic perception and action during an international conference, with the publications of results, came some 20 years ago.

Following a half dozen seminars in this field, I had the privilege to organize the first Driving Simulation Conference in Sophia Antipolis, close to Nice at the Côte d'Azur, in France, in 1995, with the support of the carmaker Renault and ISIA, the Institute Superior of Informatics and Automation, a daughter academic organization of Mines ParisTech. It was then already an international conference in the fields of driving simulation, for the community of research and training simulators, automotive and train applications, simulator architecture and human factor studies.

As the conference worked fairly well, seven new editions of this conference could be organized between 1997 and 2006 with the support of Renault, the CNRS (the French National Scientific Research organization) and the College of France and from 2002 with the active support of INRETS, the French National Research organization for Traffic and road Safety Studies. These were the glorious years, plenty of freedom and finance to carry out research and to build driving simulators, with people who were attracted to a new area of research, gathered from almost everywhere, Europe, the United States, Japan, Korea, China, and Australia. Driving simulation was not yet a key area for the industry but pleasantly tolerated with a vague feeling that some day it somehow could be useful.

Our success gave way to the birth of the DSC NA, the Driving Simulation Conference North America in 2003 and DSC Pacific and Asia in 2006. The Scientific Committee of these conferences had a number of discussions about where and when these conferences had to be organized, until the economical crisis came and wiping out the already planned DSC NA conference. The DSC Scientific Committee, renamed as DSC Europe SC, since the births of DSC NA, has decided to continue and I had again the chance to organize the 2008 and 2009 editions in Monte Carlo, with the support of Renault and hosted by the IMAGINA conference organization.

These last two years were the difficult years. The economical crisis was there and expectations both in industry and public research were growing. Digital vehicle prototypes were planned to reduce the number and cost of physical prototypes, as well as enhance engineering design robustness. Road safety and large collaborative project goals were demanding immediate results, without providing adequate tooling and human resources. Nevertheless, research of the last decades started to give good results and we have decided to come back to Paris with the renewed help of INRETS and co-organized with the active help of Arts et Métiers ParisTech.

The previous years have seen the development of high quality real time computer graphics developments with special effects, motion platform design for the efficient rendering of both sustained and transitory accelerations, validation studies for correct physiological rendering of perception and action, as well as industrial, human factors and training applications. You can find most of the trends and new developments in the different *Proceedings of the Driving Simulation Conference Europe* but a selection of high quality

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journal papers was still missing. Now, both through the selection of the best Driving Simulation Conference papers and a special call for papers, the JCISE Special Issue in Driving Simulation gives you an overview of driving simulation techniques, thanks to technical and scientific papers, reviewed by guest editors and a selection of well known driving simulation experts.

The covered fields include motion cueing, computer graphics, transport delay techniques, and applications of Automotive Driving Aid Systems (ADAS), including eco-driving.

I would like to thank the Guest editors and the reviewers for their effort to set up the first special issue in driving simulation and wish you pleasure in reading these essential papers in the driving simulation technology and science.

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