

Newsletter of the IFAC Technical Committee on Human-Machine-Systems

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(To publish your TC4.5 related information to the next newsletter: send your proposal by email to Frédéric Vanderhaegen: frederic.vanderhaegen@univ-valenciennes.fr)

1. From the new TC 4.5 Chair and Co-chairs 2011-2013.

The chairing of the TC 4.5 has changed since september 2011.

The chair is Professor Frédéric Vanderhaegen from the Human-Machine system Research Group of the University of Valenciennes, France.

The co-chairs are the organisers of the next symposia on Analysis, Design, and Evaluation of Human-Machine systems: Professor Sundaram Narayanan from the Wright State University, USA and Professor Tetsuo Sawaragi from Kyoto University, Japan.



Co-chair: Tetsuo Sawaragi



Chair: Frédéric Vanderhaegen



Co-chair: Sundaram Narayanan

This team will do their best to involve researchers to our Human-Machine Systems community and to animate interesting scientific discussions and exchanges between researchers of this community.

2. Reporting on the TC 4.5 Annual Meeting in Milano.

The last TC 4.5 meeting has held at Milano, Italy, during the IFAC World Congress, August 28 – September 2, 2011.

Several main points were discussed:

- the presentation of the new chair and co-chairs of the TC
- The acknowledgements to Prof. Wan Chul Yoon for his chairing of our TC during the previous three years
- The dissolution of the TC 4.4 on Cost Oriented Automation. Our TC will maintain its number 4.5.
- The presentation of the next 12th IFAC/IFIP/IFORS/IEA Symposium on Analysis, Design, and Evaluation of Human-Machine Systems, Las Vegas, USA, August 11-15, 2013 organized by S.

Narayanan from the Wright State University. (<http://www.cs.wright.edu/ifac/>).

- the confirmation of the organisation of the 13th IFAC/IFIP/IFORS/IEA Symposium on Analysis, Design, and Evaluation of Human-Machine Systems in Japan by Professor Tetsuo Sawaragi from the Kyoto University.
- The updating of the present list of our TC 4.5 members and their personal information available on the TC 4.5 website .
- The invitation of industrial partner to participate to our TC and to become members.
- The invitation of an industrial partner as a co-chair
- The invitation of other academic and scientific colleagues from countries that are not well represented in our TC (e.g., Countries from South America, countries from Africa such as South Africa, Australia, China, etc.).
- Members of the IFAC TC 4.5 are then invited to be involved in these four previous items and send modifications and proposals to the TC 4.5 chair and co-chairs.

3. The 11th Human-Machine System symposium in Valenciennes, France

Scope and Aim:

The 11th Symposium IFAC/IFIP/IFORS/IEA Symposium on Analysis, Design, and Evaluation of Human-Machine systems was held successfully at the Phenix theater of Valenciennes, France from the 31st of August to the 3rd of September 2010.

This international event for scholars and experts is prestigious and continues a tradition started in 1982: Seoul (Korea in 2007), Atlanta (USA, 2004), Kassel (Germany, 2001), Kyoto (Japan, 1998), Boston (USA, 1995), The Hague (Netherlands, 1992), Xi'an (China, 1989), Oulu (Finland, 1988), Varese (Italy, 1985) and Baden-Baden (Germany, 1982). The objective of this symposium is to exchange ideas and further understanding in the areas of Human-Machine Systems, Human-Computer Interaction (HCI), Intelligent and Autonomous Systems and Decision Support Systems. The symposium especially highlights the paradigm shifts in research and practice and the gathered academic and industrial communities related to the human-machine systems based researches and applications.

Participants, Program and Papers:

The program of this 11th symposium was very rich and proposed new advances of technology designed for human and interacting with human. It concerned new theoretical contributions such as human automation, human-centered design, human reliability, cooperative system, remote control, resilience engineering, cybernics, cognitive system engineering, and decision support system. The applications focused mainly on transportation, but other domains like medical engineering, manufacturing system, robotics or agriculture are also treated.

143 researchers and industrials from 18 countries attended this symposium. Upon 123 received papers, 90 were accepted as regular papers but 88 were included into the final program. Most of the papers were reviewed by 3 referees. Other 17 additional papers were presented and discussed during workshops or round tables. The program also proposed five plenary interesting sessions:

- Prof. Y. Sankai, University of Tsukuba, Japan: "Leading edge of Cybernics: Robotics that suit you"
- Prof. C. Jonker, TU Delft, Netherlands: "The challenges of creating a negotiation support system for bilateral multi-issue bargaining"
- Prof. D. Gillet, EPFL, Switzerland: "Engineering Education 2.0: At the intersection of the Web of People and the Internet of Things"
- Prof. K. Bengler, TU München, Germany: "Have It or Test It. On the Necessity of Valid Digital Human Models for Ergonomics of Future Products"
- Dir. D. Miglianico, ALSTOM, France: "Human factors and the design of railway system"

Due to the excellent quality of the selection and of the papers, several awards were distributed:

- The best contributing teams on Human-Human Systems based research (i.e., The "Human-Machine Systems" team of Valenciennes and the "Control and Simulation" team of Delft).
- The best young researcher paper award allocated to: "A Semiotic Characterization of the Process of Teaching and Learning a Skilled Motion Taking Wok Handling as an Example", H. Mizuyama, K.

Yamada, A Maki, K. Tanaka.

- The best theoretical paper award allocated to: "Revolutionizing the way people work with medical technology", A. Freudenthal, M. van Stuijvenberg, J.B. van Goudoever.
- The best applicative paper award allocated to: "Suitability of multiple correspondence analysis for a database exploration before inference analysis", P. Simon, P. Loslever, J.-C. Popieul, M. Rötting, A. Todoskoff.

Several social events were organized to extend scientific discussions in a more fun and informal content (welcoming session cocktail, visit of the mining history center of Lewarde, gala dinner, bowling party, visits of the LAMIH).

The next important meeting for Human-Machine Systems community is the 12th symposium planned in USA in 2013 and will be organized by Dean S. Narayanan from Wright University, Dayton, Ohio. The place has to be defined: Las Vegas, Hawaiï or Chicago.

So see you soon for another interesting and excellent symposium!



Frédéric VANDERHAEGEN, NOC Chair
Peter WIERINGA, IPC Chair

4. Forthcoming events.

18th World Congress on Ergonomics (IEA congress), February 12-16, 2012, Recife, Brazil:
<http://www.iea2012.org/>

Workshop on Risks Taking in Life Critical Systems - Prevention and Crises management, March 14-16, 2012, Melbourne, USA, co-organized by the University of valenciennes, France and the Florida Institute of Technology, USA. For more detail, please contact: Prof. P. Millot (Patrick.Millot@univ-valenciennes.fr or pmillot@fit.edu) or Prof. G. Boy (gboy@fit.edu)

1st IFAC Conference on Embedded Systems, Computational Intelligence and Telematics in Control, April 3-5, 2012, Würzburg, Germany: www7.informatik.uni-wuerzburg.de/cescit

12th IFAC/IFIP/IFORS/IEA Symposium on Analysis, Design, and Evaluation of Human-Machine Systems, August 11-15, 2013, Las Vegas, USA: <http://www.cs.wright.edu/ifac/>.

4th IFAC Symposium Mechatronic Systems, April 10 – 12, 2013, Hangzhou, China.

5. Special announcement of Professor Henk Stassen's passing

Prof. dr. ir. Henk G. Stassen (1935-2011)

Our highly respected colleague and good friend Professor Henk Stassen passed away 28

September 2011, the day before his 76th birthday. He was Prof. Emeritus at Delft University of Technology, The Netherlands. He was an extremely successful researcher in control applications: in human-machine systems; in medical rehabilitation, prostheses, and decision support systems; in biomechanical engineering; in telemanipulation; and in space manipulator control. He had an outstanding international reputation.

Henk Stassen graduated in 1964 and received his doctorate in 1967, both with honors, from the Department of Measurement and Control Engineering at Delft. He worked as a visiting researcher at UCLA, Stanford, and MIT. In 1977 he became Professor of Man-Machine Systems / Cybernetic Ergonomics at Delft and in 1985 member of KNAW (the Royal Netherlands Academy of Sciences), Science Division and advisory member of the Medicine Section. From 1990 to 1994 he was dean of mechanical engineering at Delft and in 1995 he received an Honorary Doctorate from the University of Craiova, Romania. He was a board member of the Netherlands Institute for Marine Research and a member of the Railway Accident Board. In 2007 he was made a Knight of the Order of the Netherlands Lion. He was a cofounder of STW (Netherlands Technology Foundation) in 1981.

His colleagues at Delft, Professors J. Dankelman and F. Van der Helm, said of him : Henk Stassen was one of the outstanding professors who gave face to the TU Delft. He was unconventional, both in his daily actions and in his scientific approach. His amulet and purple-green MIT tracksuit characterized him, even in his role as dean. Scientifically Henk Stassen was an out-of-the-box thinker, who managed to bring innovations created with engineering techniques into medical practice. He was one of the first professors who gave shape in the intensive cooperation between clinicians and technicians: A Medical Delta (Netherlands Health Science & Technology network) professor before its time. He was a great inspiration for 220 MSc students and 64 PhD students. He has conducted pioneering research with great social significance in the fields of rehabilitation techniques, prostheses - and orthoses, ergonomic design, control of aircraft, vehicles and ships, and large chemical and nuclear plants. The Department of Biomechanical Engineering has been established by his inspiration, and works in his spirit of multidisciplinary and unconventional scientific approach. His personal commitment was impressive.

Within IFAC, he was vice-chair of the Technical Committee TC on Systems Engineering (from 1990 to 1993), chaired the TC on Human-Machine Systems for three triennials (from 1990 to 1999), organized one of its masterplan Symposia (as IPC chairman and editor of the Proceedings) in The Hague in 1992, and published several papers in *Automatica* and *Control Engineering Practice*. He founded the conference series European Annual Manual (European Annual Conference on Human Decision Making and Manual Control) in 1981, starting in Delft (see <http://www.annualmanual.tudelft.nl/history.html>).

Among his published works are the following important papers:

- (1) Internal representation, internal model, human performance model and mental workload. H.G. Stassen, G. Johannsen, N. Moray. *Automatica* , Volume 26, Issue 4, July 1990, Pages 811-820
- (2) Telemanipulation and telepresence. H.G. Stassen, G.J.F. Smets. *Control Engineering Practice* , Volume 5, Issue 3, March 1997, Pages 363-374.
- (3) Man-machine aspects of minimally invasive surgery. H.G. Stassen, J. Dankelman, K.A. Grimbergen, D.W. Meijer. *Annual Reviews in Control* , Volume 25, 2001, Pages 111-122.
- (4) *Engineering for Patient Safety: Issues in Minimally Invasive Procedures*. Editors: J. Dankelman, C.A. Grimbergen, H.G. Stassen. Boca Raton, FL, USA: CRC Press, Taylor & Francis Group, 2004

Henk had a personal style of openness and nonconformance that endeared him to students and colleagues alike. We will sorely miss him. He leaves his wife Mia, two sons and a daughter.

Thomas Sheridan, Gunnar Johannsen, Neville Moray