



### Applications of Human System Interaction

**The Theme:** Today's humans interact with various systems, sophisticated tools and a variety of machines ranging from fly/drive-by-wire vehicles and planes, space shuttles, to ubiquitous portable systems such as smartphones, PDAs, iPods, and highly interactive video games such as Wii. As human system interaction (HSI) has evolved, so have the technologies that enabled this interaction. From modern biometric sensing, 3D haptic, and fingerscan devices, via biomimetics, exoskeleton and biomechatronic systems, ending with cognitive control and virtual reality, these technologies heavily depend on ever more sophisticated and inherently interdisciplinary blend of biological, psychological, electromechanical, computational intelligence domains. Implementations on the other hand range from multimodal interaction systems with 3D haptics of future used for entertainment (gaming, electronic pet toys, home appliances, and robotics), used in mission critical applications (telesurgeries, avionics, nuclear plant), to perhaps the most impressive of all human system interaction forms – cognitive control. The main objective of this Special Section is to bring the latest advances and ideas of the worldwide research community into a common platform. Topics of interest of this Special Section include, but are not limited to::

- Merging of mind & machine
- Human-robot cognitive and physical control, neural interfaces
- Mathematical models of mammalian neurons
- Biologically inspired designs (biomimetics, bioimitation), and psychological behavior modeling
- Programming intellect and software of intelligence (reinforcement learning, self-organizing algorithms)
- Computational intelligence, fuzzy/neural/particle swarm implementations, data mining, and modern heuristics
- Multimodal interfaces and media interaction systems (speech, graphic, multimedia)
- Haptics of future (3D force feedback touch) for real and virtual environment recognition
- 3D biometric sensing, artificial muscles, and controllable surface textures
- Critical and teleoperation systems (surgeries, avionics, nuclear control systems)
- Immersive and augmented virtual reality environments (CAVE)
- Wearable computing (biomechatronics, exoskeletons, smart clothes)
- Mobile and portable computing devices and pervasive networks and services (3G/4G)
- Behavior based autonomous robotic architectures
- Robot colonies, and future trends in robot intelligence
- Human system interaction in education
- Mobile social networks

#### Manuscript Preparation and Submission

Follow the guidelines in "Information for Authors" in the IEEE Transaction on Industrial Electronics <http://tie.ieee-ies.org/tie/>  
Please submit your manuscript in electronic form through Manuscript Central web site: <http://mc.manuscriptcentral.com/tie-ieee>. On the submitting page #1 in popup menu of manuscript type, select: Industrial Embedded Microcontrollers.

#### Timetable

**Deadline for manuscript submissions**  
**Information about manuscript acceptance**  
**Estimated publication date**

**December 31, 2008**  
**February 2009**  
**May 2009**

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