Cybermatics: Cyber Sciences, Technologies and Humanities for Cyber-enabled Worlds

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Abstract. Advances in computers, information and networks, especially in the Internet and the Web, not only offer us novel services, but are also bringing about a digital cyberspace and a further digital cyber world. Numerous digital things or cyber entities will be generated and will reside in the cyber world, and countless real things in conventional physical, social and mental worlds will possess some cyber mappings or cyber components, so as to have a cyber existence. Cyberization is an emerging trend forming the new cyber world and reforming these conventional worlds towards cyber-enabled hyper worlds. It is absolutely necessary to establish a holistic and trans-disciplinary field, which we have called Cybermatics, to build systematic knowledge about new phenomena, behaviors, properties and practices in the cyberspace, cyberization and cyber-enabled hyper worlds. This tutorial is to first present the emerging trend of cyberization, then examine Cybermatics as a necessary field of study for cyberization, and finally explain what Cybermatics is and what it encompasses, and how it is related to other fields and areas. More about tutorial contents, please refer to "Cybermatics: A Holistic Field for Systematic Study of Cyber-enabled New Worlds," in IEEE Access, vol. 3, pp. 2270-2280, 2015. http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7320961 and http://www.cybermatics.org/

Biography. Jianhua Ma is a Professor at the Faculty of Computer and Information Sciences of Hosei University since 2000. Previously, he had 15 years' teaching/research experience at NUDT, Xidian University, and the University of Aizu (Japan). His research from 1983 to 2003 covered wireless communications, data encryption, speech processing, multimedia QoS, graphics ASIC, e-learning, CSCW, multi-agents, Internet AV, mobile service, P2P network, etc. Since 2003 he has been devoted to what he called Cyber World, Smart World and Hyperworld pervaded with smart u-Things/iThings, characterized with Ubiquitous Intelligence for Wisdom as a Service with UbiSafe guarantee. His current research interests include ubiquitous computing, social computing, context-aware service, Internet of Things, wearable computing, personality computing, digital clone and cybermatics.

Dr. Ma has published over 200 papers, and edited over 15 books. He has served JUCI, JMM, JoATC, JPCC, IJUNESST, and IJDTA, as a Co-EiC, and on the editorial boards of many journals, and has edited over 20 journal special issues as a Guest Editor. He organized the 6th Int'l Conf. on Distributed Multimedia Systems (DMS'99) as a PC Co-Chair, the 1st Int'l Conf. on Cyber Worlds (CW'02) as one of founders and PC Co-Chairs, the 18th Int'l Conf. on Advanced Information Networks & Applications (AINA'04) as a General Co-Chair, and the 1st IEEE Int'l Conf. on Social Computing (SocialCom'09) as an Advisory Chair. He is a founder of IEEE Conferences on Ubiquitous Intelligence and Computing (UIC), on Autonomic and Trusted Computing (ATC), on Cyber, Physical and Social Computing (CPSCom), and on Internet of Things (iThings), Smart World Congress, and Cyber Science and Technology Congress (CyberSciTech). He is a founding chair of IEEE CIS Task Force on Smart World, and IEEE SMCS Technical Committee on Cybermatics for Cyber-enabled Worlds.