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Intelligent design and creativity for smart manufacturing

Smart manufacturing is now more and more associated with Industry 4.0 (i4), which stands for the fourth, and the first a-priori engineered, 'Industrial (R)evolution'. It refers to the industrial value chain and technological evolution upgrading the factory floor to a be-spoke mass innovation centre. It is associated with the concepts of customized mass production, smart manufacturing, smart factory, autonomous manufacturing, networked embedded systems, cyber-physical systems, industrial internet, and internet of everything. This talk will explore critical insight into the global perspective in relation to artificial intelligence. For Industry 4.0, multi-national companies such as Siemens are already making a leading effort in the vertical integration to network machinery, control systems and sensors together, so that, all the data from the production process can be used to make decisions on manufacturing. Upgrading the entire manufacturing value chain at the dawn of Industry 4.0 has led to a global race in innovation, design, and creativity for smart manufacturing and smart products through life. Through computational intelligence, the talk focuses on how to utilize artificial evolution to achieve manufacturing-ready smart designs with increased innovation and creativity for enhanced competitiveness. The talk will conclude with a summary of challenges, opportunities and future directions presented by Industry 4.0 and how we may best capitalize on them in China-Europe research cooperation.

Biography

Yun Li is currently a Professor at Dongguan University of Technology, China. He received his PhD in parallel computing and control from University of Strathclyde, UK, in 1990. During 1989 and 1990, he was with UK National Engineering Laboratory, East Kilbride, and Industrial Systems and Control Ltd, Glasgow. He joined the University of Glasgow as Lecturer in 1991 and served as Founding Director of University of Glasgow Singapore during 2011-2013. He developed one of the world's first 30 EC course in 1995 and the popular online interactive courseware GA Demo in 1997. In 1998, he established and chaired both the IEEE Computer-Aided Control System Design Evolutionary Computation Working Group and the European Network of Excellence in Evolutionary Computing (EvoNet) Workgroup on Systems, Control, and Drives for Industry. He has over 200 publications, one of which is elected by Thomson Reuters to "Research Front in Computer Science", one to "Research Front in Engineering", four to "Essential Science Indicators" (ESI), and two have been noted the most popular in IEEE Transactions on Control Systems Technology and the most cited in IEEE Transactions on Systems, Man, and Cybernetics – Part B: Cybernetics since their publications in 2005 and 2009, respectively. He is a Chartered Engineer in UK and is currently an Associated Editor of IEEE Transactions on Evolutionary Computation and Guest Editor of Smart Design, Smart Manufacture and Industry 4.0 Special Issue for Energies.

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