Jun Wang is a Professor and the Director of Computational Intelligence Laboratory in the Department of Mechanical and Automation Engineering at the Chinese University of Hong Kong. Prior to this position, he held various academic positions at Dalian University of Technology, Case Western Reserve University, and University of North Dakota. Besides, he also holds a Cheung Kong Chair Professorship in computer science and engineering at Shanghai Jiao Tong University on a part-time basis since 2008. He received a B.S. degree in electrical engineering and M.S. degree in systems engineering from Dalian University of Technology, Dalian, China. He received his Ph.D. degree in systems engineering from Case Western Reserve University, Cleveland, Ohio, USA. His current research interests include neural networks and their applications. He published over 140 journal papers, 12 book chapters, 9 edited books, and numerous conference papers in the areas. He is an Associate Editor of the IEEE Transactions on Systems, Man, and Cybernetics Part B since 2003 and a member of the Editorial Advisory Board of the International Journal of Neural System since 2006. He also served as an Associate Editor of the IEEE Transactions on Neural Networks (1999-2009) and IEEE Transactions on Systems, Man, and Cybernetics Part C (2002-2005), a guest editor/co-editor of the special issue of European Journal of Operational Research (1996), International Journal of Neural Systems (2007), and Neurocomputing (2008). He was an organizer of several international conferences such as the General Chair of the 13th International Conference on Neural Information Processing (2006) and the 2008 IEEE World Congress on Computational Intelligence. He served as the President of Asia Pacific Neural Network Assembly in 2006. He is an IEEE Fellow, an IEEE Distinguished Lecturer (2010-2012), and a recipient of the Research Excellence Award from the Chinese University of Hong Kong (2008-2009) and the First Class Shanghai Natural Science Award (2009). In the last ten years, he was invited to give keynote/plenary/invited talks at numerous conferences/symposia/workshops in Asia (China, Indonesia, Japan, Korea, Philippines, Singapore, Thailand), Europe (Bulgaria, Germany, Hungary, Poland, Slovakia), North America (USA, Mexico), Africa (Egypt), and Oceania (New Zealand).

**Topic - Neurodynamic Optimization Approaches to Robotics and Automation**

**Abstract:** In the last two decades, neurodynamic optimization has emerged as a viable means for dynamic optimization arising in numerous engineering applications. Because of the inherent nature of parallel and distributed information processing in recurrent neural networks, it is particularly desirable for dynamic optimization in decentralized decision-making situations arising frequently in robotics and automation. In this talk, I will present the historic review and the state of the art of neurodynamic optimization models and selected applications in robotics and automation. Specifically, starting from the motivation of
neurodynamic optimization, we will review various recurrent neural network models for optimization. Theoretical results about the stability and optimality of the neurodynamic optimization models will be given along with illustrative examples and simulation results. It will be shown that many fundamental problems in robotics and control can be readily solved by using the neurodynamic optimization models. Specific applications will be highlighted including robot motion planning and obstacle avoidance, grasping force optimization using multi-fingered robotic hands, and nonlinear model predictive control with unknown system dynamics.
Uday B. Desai received the B. Tech. degree from Indian Institute of Technology, Kanpur, India, the M.S. degree from the State University of New York, Buffalo, and the Ph.D. degree from The Johns Hopkins University, Baltimore, U.S.A., all in Electrical Engineering. Since June 2009 he is the Director of IIT Hyderabad, previously he worked as an Assistant Professor in the School of Electrical Engineering and Computer Science Department at Washington State University, Pullman, WA, U.S.A., and an Associate Professor at the same place. He was a Professor in the Electrical Engineering Department at the Indian Institute of Technology - Bombay. He is now on lien as Director of IIT Hyderabad. He has held Visiting Associate Professor's position at Arizona State University, Purdue University, and Stanford University. He was a visiting Professor at EPFL, Lausanne. He was the Director of HP-IITM R and D lab at IIT-Madras. His research interest is in wireless communication, wireless sensor networks and statistical signal processing. He is the Editor of the book "Modeling and Applications of Stochastic Processes" (Kluwer Academic Press, Boston, U.S.A. 1986) and co-editor of Second Asian Applied Computing Conference, Springer Verlag (2004). He is also a co-author of two books "A Bayesian Approach to Image Interpretation" and "Multifractal based Network Modeling", both from Kluwer Academic Press. Dr. Desai is a senior member of IEEE, a Fellow of INSA (Indian National Science Academy), Fellow of Indian National Academy of Engineering (INAE), and a Fellow of The Institution of Electronic & Telecommunication Engineers (IETE). He is recipient of Ram Lal Wadhwa Award from the Institution of Electronics and Telecommunication Engineers for 2001. He was an associate editor of IEEE Transactions on Image Processing. He is Vice-President of the Indian Unit for Pattern Recognition and Artificial Intelligence. He is on the Technology Advisory Board of Microsoft Research Lab. India. He is also on the advisory board of several startups. He was chair person for various IEEE International Conferences He is one of the founding member of COMSNETS and also Society for Cancer Research and Communication. He was the Chair for IEEE Bombay Section. He was also on the Visitation Panel for University of Ghana.

**Topic - Title: Multihop Mobile Wireless Communication**

**Abstract:** Today wireless communication buzz words are: Ubiquitous communication, cyber physical system, ad hoc networks, pervasive communication, etc. Essentially, they all refer to: Mobile Adaptive Self-organizing Multihop Multi-system Wireless Communication.

In this talk Dr. Desai will take a look at some of the recent research of his group at SPANN Lab. IIT Bombay and IIT Hyderabad in the broad area of Mobile Adaptive Self-organizing Multihop Multi-system Wireless Communication. In particular, he will focus on his work on end to end system development using
wireless sensor network for precision agriculture and pollution monitoring. He will also present some of the theoretical work in the area of multihop cellular networks (MCN) and Multihop cellular sensor networks (MCSN). He will also describe some of the work in vehicle to vehicle (V2V) communication and its application to collision avoidance. He will conclude with some of the work on cognitive radio, in particular cognitive relaying.
C. L. Philip Chen received his M.S. degree from the University of Michigan, Ann Arbor, Michigan, U.S.A. and his Ph.D. degree from Purdue University, West Lafayette, Indiana, U.S.A, both degrees in Electrical Engineering. He was with Wright State University, Department of Computer Science and Engineering, from 1989 to 2002 as an assistant, an associate, and a full professor before he joined the University of Texas, San Antonio, where he has been a Professor and Chair of the Department of Electrical and Computer Engineering, the Associate Dean for Research and Graduate Studies of the College of Engineering. Currently, he is Chair Professor and the Dean of Faculty of Science and Technology, University of Macau.

Dr. Chen has been a visiting research scientist at the Materials Directorate, U.S. Air Force Wright Lab. He has been a senior research fellow sponsored by the U.S. National Research Council and a research faculty fellow for NASA Glenn Research Center for several years. His current research interests include theoretical development in computational intelligence, intelligent systems, robotics and manufacturing automation, networking, diagnosis and prognosis, life prediction and life-extending control. Credited to his technical contribution, he is an elected IEEE Fellow and AAAS Fellow.

Dr. Chen has been active in many IEEE international conference services and publications. Currently, he is the Vice President on Conferences and Meetings of IEEE SMC Society, where he has been the VP on Technical Activities in Systems Science and Engineering, a member of IEEE SMC Board of Governors and Treasurer and serves as an Associate Editor of IEEE Transactions on SMC-C and IEEE Systems Journal. As a result of his assiduous service, he received Outstanding Contribution Award in 2008. In addition, he is a member of Tau Beta Pi and Eta Kappa Nu honor societies. On education and academic service, Dr. Chen is the founding faculty advisor of IEEE Computer society student chapter and has been the faculty advisor of the Tau Beta Pi engineering honor society at the University of Texas at San Antonio. In addition, he is a certified ABET (Accreditation Board of Engineering and Technology Education) Computer Engineering, Electrical Engineering, and Software Engineering program evaluator.

**Topic - Multimedia Information Security: An Overview of Research and Challenges**

**Abstract:** Digital multimedia content, can be created, edited, distributed, shared, and stored with convenience at a very low cost over the mobile and ad hoc nature of today's various networks. As a result, multimedia security and digital authentication, transmission and detection of sensitive information via communication systems have become a very important research subject recently. Encryption and data
hiding are two most popular areas in multimedia security research. This talk will focus on data hiding techniques, especially, steganography techniques.

Steganography is the hiding of a message within another message so that the presence of the hidden message is indiscernible. Practically, it is the art of secret communication. Digital data can be hidden in pictures, videos, music, text, binary files, or source code. The key concept behind steganography is that the message to be transmitted is not visible to the informal eye or ears. In fact, people who are not intended to be the recipients of the message should not even suspect that a hidden message exists. Recently, steganography has received enormous attention in industry and in academia because it has been reported that terrorists has been using information hiding to disguise their communications.

The purpose of steganalysis is to discover the presence of hidden messages in digital media. Steganography and steganalysis have not been completely examined in detail by the scientific community outside the military. It is a relatively new and fast growing field. Over 90% of all the open publications have appeared in the past seven years. This area now has become a multimillion-dollar research market, and closely related to the security of every nation. The presented work is based on the result from Dr. S. Agaian, Dr. Chen and graduate students.
Takayuki Fujita is an Associate Professor of the University of Hyogo, Japan. He is also a group-leader for the Micro Power Group of the ERATO Maenaka Sensing Fusion Project on Japan Science Agency. He received Ph. D. degree in engineering from Himeji Institute of Technology in 2000. Then he joined the Osaka prefecture Super Eye Image Sensor (SEIS) project as a researcher and had been involved in the development of MEMS multi-environmental sensor. Since 2001, he had been research associate in the Department of Electronics of the Himeji Institute of Technology. By unification of universities of the Hyogo prefecture in 2004, he joined University of Hyogo. Since 2007, he has been an Associate Professor. Then he joined the ERATO Maenaka Sensing Fusion Project in 2008. His interests are in MEMS sensors, actuators and their system integration. His current research includes MEMS energy-harvester in human sensing systems.

**Topic:** MEMS Mirror Controlling System with Holed-PSD

**Abstract:**
MEMS (Micro-Electro Mechanical Systems) technology is presently becoming a key technology for future microelectronics. Some remarkable developments in MEMS are the driving force behind the current MEMS field, and many MEMS devices in the market are using these technologies effectively. In my presentation, current and particularly remarkable MEMS technology and MEMS sensors will be described. In addition, our group started a project named BHuman Sensing Fusion (B to realize patchable system to the human body for monitoring human health condition). The system includes many types of MEMS sensors, integrated circuits with wireless communication capability and micro-power sources, energy harvester, in small size. The system designed is based on MEMS technology.
Invited Talk

Koji Murai, Kobe University, Japan

Dr. Koji Murai is Professor at Kobe University, Japan. He was also associated with KUMM, Department of Maritime Science as a research associate, Yuge National College of Maritime Technology, Osaka University, Maine Maritime Academy, Marine Transportation Prof Koji Murai was session Chair at Human, IEEE-SMC2002, Humans and Machines II, IEEE-SMC2003 ,Track Chair, Track: Information in the Oceanology- Special Session: Maritime Navigation, IEEE-SMC2006,Session Chair, Humans and Transportation Systems, IEEE-SMC2007, Chair, IEEE SMCS TC on Human Centered Transportation Systems, Session Organizer, Track on Human Centered Systems, IEEE-SMC2008 , Co-Chair SS, Human Centered Transportation Systems, IEEE-ISCE2009

Title: Evaluation of Body Sway in Artificial Ship Rolling and Pitching

Abstract: A navigator guides a ship for safe and efficient navigation, and navigator gets navigational information through the five senses. Visual information is most important because it is said to occupy more than eighty percents to whole information. We are researching the relationship between the visual image of seascape and the physiological/body response using ship bridge simulator, which is used to train and educate ship handling and how to handle a navigational instrument. The simulator-based training is popular worldwide. The simulator is able to control the traffic situation and to do the same scenarios for trainees. On the merchant ship simulator-based training, the ship movements- rolling, pitching, yawing, etc., never simulate by vision or motion platform. However, the ship movement is an important factor for the simulator-based training, and we need to confirm the influence of body and mental workload for the simulated ship movements. The purpose is to find characteristics of body response to artificial ship movements by vision and motion platform.
Prashant Mishra is a seasoned software architect and capable of executing on ambitious strategies. Prashant has eleven years of industry experience prior to starting his venture. Currently President with RGen Solutions (Consulting Company) and Intus Corporation (Mobile Ad and Licensing platform Company). Prashant has worked for Microsoft and Cognizant Technology in different roles. While working at Microsoft, Prashant was responsible for PA (Product Activation) Licensing Platform, and holds a couple of patents in Licensing Space. He has also worked with Visual Studio, and was a part of the Microsoft Localization Development team. He has been awarded with Most Valuable Programmer for Microsoft in Year 2002. Prashant has MS Computer Engineering from Seattle University, USA and BS degree from Nagpur University, India.

**Topic:** Industries participation to make changes to education paradigm.

**Abstract:** Mr. Prashant Mishra will be deliberating on the importance of Industry Institute Interaction. He will be emphasizing on the need for camaraderie between education sector and Industries. He will be also highlighting the various avenues for the educational institutes to improve and modify their curricula to suit industry needs.