**IEEE HYDERABAD SECTION**

**IEEE Computational Intelligence Society**

## Institute of Electrical and Electronics Engineers(IEEE) Hyderabad Section
## Joint Chapter of IEEE CIS/GRSS Societies, Hyderabad Section
### Presents

## A Distinguished Lecturer talk on
## *Evolutionary Mobile Robots Using Computational Intelligence Techniques*
### By
## Chia-Feng Juang National Chung Hsing University, Taiwan

**Date: 06 October 2020, Tuesday**

**Link to join:**
https://ieeemeetings.webex.com/ieeemeetings/onstage/g.php?MTID=e6fb285691831c1efd1e97db1d25d26f2

**Time: 5 pm – 6pm (Indian Standard Time)**

**REGISTRATION FEE : NIL**

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## Abstract:

Evolutionary robots, like autonomous artificial organisms, automatically develop their own skills by interaction with the environment. This talk will focus on evolutionary locomotion control of mobile robots using computational intelligence techniques, including fuzzy systems and evolutionary computation. First, I will introduce the basic concept of evolutionary fuzzy systems (EFSs). Next, for wheeled robots, an obstacle boundary following behavior learned through EFSs will be introduced. Evolutionary fuzzy control of a single wheeled robot and multiple wheeled robots cooperatively carrying an object through multi-objective evolutionary computation algorithms for obstacle boundary following will be introduced. Then, to boost the learning efficiency of multiobjective EFSs in this application, the technique of reinforcement neural fuzzy surrogate-assisted learning will be given. Finally, navigation of a single and multiple cooperative wheeled robots in unknown environments will be presented.

## Brief Bio:

Chia-Feng Juang received the B.S. and Ph.D. degrees in control engineering from National Chiao-Tung University, Hsinchu, Taiwan, in 1993 and 1997, respectively. Since 2001, he has been with the Department of Electrical Engineering, National Chung Hsing University, Taichung, Taiwan, where he became a Full Professor, in 2007, and has been a Distinguished Professor, since 2009. He has authored or coauthored seven book chapters, over 100 journal articles (including over 55 IEEE journal articles), and over 100 conference papers. His current research interests include computational intelligence, intelligent control, computer vision, and evolutionary robots. He was elevated to Chinese Automatic Control Society (CACS) Fellow in 2016 and IEEE Fellow in 2019. He received the Outstanding Youth Award from Taiwan Fuzzy Systems Association, Taiwan, in 2014, the Outstanding Automatic Control Engineering Award from CACS, Taiwan, in 2014, and the Outstanding Electrical Engineering Professor Award from Chinese Institute of Electrical Engineering, Taiwan, in 2019. He was an Associate Editor of the IEEE Transactions on Fuzzy Systems and is an Associate Editor of the IEEE Transactions on Cybernetics, Asian Journal of Control, and Journal of Information Science and Engineering, and an Area Editor of International Journal of Fuzzy Systems.