

学术报告会

时间：2013年12月12日(周四)10:00-11:00

地点：电院群楼3-308会议室

Intelligent Systems and Fuzzy

Cognitive Maps

Prof. Peter P. Groumpos

University of Patras, Greece



Abstract:

In modern science and technology, there are some Research Directions and challenges which are at the forefront of worldwide research activities because of their relevance. One of such “meta-challenges” in the present world is that of intelligent systems (IS). Another “meta-challenge” and “meta-knowledge” is that of Fuzzy Cognitive Maps (FCMs). FCM integrates the accumulated experience and knowledge on the operation of the system, as a result of the methods by which it is constructed. Examples may be found everywhere. Intelligence plays a very important role in modeling and controlling dynamic complex systems using FCMs. Both theories appear in many engineering fields and non-engineering fields. Modeling of these systems often results in very high-order models imposing great challenges to analysis, design and control problems. All these challenges call for advanced system theories which will exhibit some intelligence and will therefore be useful for their human users. In this report, new theories of FCMs are presented and reviewed. The usefulness of FCMs in studying modeling and control problems of dynamic complex systems is demonstrated through a number of simulation results from different scientific fields. The use of FCMs in modeling, analyzing and controlling dynamic complex systems is still in its infancy and there is ample scope for further investigation and development. Future research directions are presented and discussed.

Biography:

Prof. P. Groumpos was born in 1950 in Greece. He received his Ph.D at the Dept of Electrical and Computer Engineering of the SUNY at Buffalo, USA in 1979. He moved as an Assistant Professor to Cleveland State University, Ohio in 1980 and was promoted to Associate professor in 1985. In 1990, he was elected full Professor at the Department of Electrical and Computer Engineering of the University of Patras, Greece. In 1992, he established the Laboratory for Automation and Robotics and has been its Director since then. His research interests cover the broad areas of modeling and control of large complex Dynamic Systems. He has published 8 chapters in books and over 300 papers in journals and/or in International conferences. He has been the chairman of the IFAC LSS 98 and MIM 2000 conferences and has also been the General Chairman of a number of international conferences. He was one of the co-founders of the IEEE Control Systems Magazine and he served on it as the first associate editor for book reviews. He is a Senior Fellow Member of the IEEE and an Honorary member of the Russian Association for Mechatronics. He is also very active in promoting the cooperation of international researchers with industrial partners.