

Preface EIS -10

This year's conference on *evolving intelligent systems*, the *2010 International Symposium on Evolving Intelligent Systems (EIS'10)* was organised in the framework of The 2010 Annual Convention of the Society for Study of Artificial Intelligence and Simulation of Behaviour (AISB'10). The Convention is a family of related events which takes place this year in De Montfort University, Leicester, UK and is organized and Chaired by Dr. Aladdin Ayesh. The 2010 conference continues the traditions set by the previous conferences on this topic:

- 2006 IEEE Symposium on Evolving Fuzzy Systems, Ambleside, UK;
- the Tutorial Workshop on *Evolving Intelligent Systems: The Knowledge Engineering Approach*, IEEE Symposium Series on Computational Intelligence, Hawaii, USA, 2007;
- IEEE International Workshop on Genetic and Evolving Fuzzy Systems, Witten, Germany, 2008;
- the Workshop on *Neurocomputing and Evolving Intelligence* (NCEI2008), Auckland, New Zealand, 2008;
- the 2009 IEEE International Workshop on Self-Developing Evolving Intelligent Systems (ESDIS 2009) which was organized in the framework of the IEEE Symposium Series on Computational Intelligence, Nashville, TN, USA

and precedes the next year's event – The 2011 IEEE International Workshop on Evolving and Adaptive Intelligent Systems which will again be held in the framework of the IEEE Symposium Series on Computational Intelligence, Paris, France.

EIS'10 aims to bring together the growing number of active researchers in the emerging and fast developing area of *evolving intelligent systems* (eIS). One of the key questions in the area of *computationally intelligent systems* is how to design them. Traditionally, expert knowledge and off-line methods of learning/training of a pre-specified system structure were used in the last century. Faced with the ever-growing amount of data that are often not static but streaming and often with complex statistical characteristics the direction of self-development seemed to be the right one. The self-development, however, also requires an important element of evolving in terms of system structures to be flexible, not pre-fixed. This emerging area of research of eIS was formed around the turn of the centuries with some important achievements in the areas of neural networks and fuzzy rule-based systems, neuro-fuzzy hybrids and currently also in the area of general systems, hardware implementations, etc. A range of very interesting and attractive applications of such systems to robotic, autonomous unmanned systems, chemical and petro-chemical process industry, bio-medical data processing etc. has also been implemented.

After a careful selection according to the established standards of this series of events (a minimum of two independent reviews) only thirteen papers were selected to be orally presented in Leicester grouped in four sessions. The papers cover both the methodological and application aspects of evolving intelligent systems:

- 'An Online Predictor Model as Adaptive Linear model and Evolving Takagi-Sugeno Model' by Ahmad Kalhor, Babak N. Araabi and Caro Lucas (Iran);
- 'A Structure Evolved Learning Method for Mamdani Fuzzy Systems' by Di Wang, Xiao-Jun Zeng and John Keane (UK);
- 'Dynamic Analysis of the Participatory Learning Algorithm' by Elton Lima, Rosangela Ballini and Fernando Gomide (Brazil)

- ‘Incremental Classification of Images by Human Assisted Fuzzy Similarity Analysis’ by Gancho Vachkov (Japan)
- ‘Clustering to train an evolving radial basis function’ by Jose de Jesus Rubio, Jaime Pacheco and Raul Rivera (Mexico);
- ‘Cascaded Multi-resolution Spline-based Fuzzy Neural Network’ by Vitaliy Kolodyazhniy and Yevgeniy Bodyanskiy (Switzerland and Ukraine);
- ‘The Need for Benchmarks and Meta-Models in Evolving Systems’ by Katharina Tschumitschew and Frank Klawonn (Germany)
- ‘Clustering as a Tool for Self-generation of Intelligent Systems: A Survey’ by Rashmi Dutta Baruah and Plamen Angelov (UK)
- ‘Reactive-adaptive Methodology to encode Evolving Intelligent Agents in Serious Games’ by Mario Gongora and David Irvine (UK);
- ‘Lifelong Learning by Evolution in Robotics: Bridging the Gap from Theory to Reality’ by Borja Santos-Diez, Francisco Bellas, Andres Faina and Richard Duro (Spain);
- ‘An Evolving Framework for Clustering Computer Users’ by Jose Antonio Iglesias, Agapito Ledezma and Araceli Sanchis (Spain)
- ‘New Developments in Statistical Signal Processing of Quaternion Random Variables with Applications in Wind Forecasting’ by Clive Cheong Took and D. P. Mandic (UK), and finally:
- ‘Application of ANN-GA Hybrid to run a conveyor control system’ by Paul Morley and Jeff Johnson (UK)

All four sessions run consecutively which provides a better environment for in-depth focused discussions which is traditional for the events in the area of eIS.

We warmly welcome you in the vibrant and probably the most multi-cultural city of England and UK, Leicester and wish you a pleasant stay and fruitful atmosphere.

2010 International Symposium on Evolving Intelligent Systems (EIS-10) co-Chairs:

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