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Springer Journal on Evolving Systems

Special Issue on
Temporal Aspects in Fuzzy Cognitive Maps

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Scope
The theory of fuzzy cognitive maps (FCMs) is a powerful approach to modeling human knowledge by means of causal reasoning. Taking advantage of fuzzy logic and cognitive map theories, FCMs enable system designers to model complex frameworks by defining degrees of causality between causal objects. Initially, FCMs have been used to plan and make decisions in the field of international relations and political developments but, recently, they have emerged as a powerful modeling and simulation technique that is applicable to numerous application fields do not belonging in the area of social or political science. For instance, FCMs have been exploited to model the behavior of complex applications as control plant systems, electrical circuit analysis, cooperative man–machines environments, distributed group-decision support, adaptation and learning, etc.

However, in spite of their benefits, conventional FCMs are not capable to deal with the concept of time in a direct way and, as a consequence, they could fail to model evolving systems, i.e. systems where the temporal notion represents a fundamental aspect for yielding high simulation and forecasting performance. Consequently, in order for FCMs to be widely deployed in the field of dynamic systems modeling, many research challenges need to be faced and addressed. Indeed, even though several research studies have extended the conventional idea of FCM by adding some “temporal features” capable of partially making the cognitive inference engine depending upon the time dimension, the issue related to the dynamism and long-term inference can be still considered an open research problem.

The aim of this special issue is to report to the community cutting-edge research achievements covering all aspects of FCMs and their temporal extensions. We are seeking papers that describe high quality, original, and unpublished contributions.
Possible topics include, but are not limited to:

- Theoretical Aspects of Evolving Fuzzy Cognitive Maps
- Dynamic Cognitive Networks
- FCM Extensions
- Machine Learning Algorithms for Dynamic FCMs
- Hybrid FCM-based approaches
- Evolutionary Methods for Learning Dynamic FCMs
- Neural Methods for Learning Dynamic FCMs
- Rule-based extensions for Evolving FCMs
- Evolving FCMs in Knowledge Extraction and Representation
- Evolving FCMs in Pattern Recognition
- Evolving FCMs in Data Mining
- Evolving FCMs in Approximate Reasoning
- Evolving FCMs in other applications

**Schedule**
- Submission due date: *September 15th, 2012*
- First Reviews Due: *November 30th, 2012*
- Second Reviews Due and Acceptance Notification: *March 10th, 2013*
- Final Manuscript Due: *May 10th, 2013*
- Publication: *3th quarter 2013*

**Submission**
The special issue welcomes original contributions pertaining to the specified scope. Manuscripts submitted should not be under consideration elsewhere and extended conference papers must contain at least 30% of new material. Manuscript should also be formatted according to the journal template: [http://www.springer.com/physics/complexity/journal/12530](http://www.springer.com/physics/complexity/journal/12530) and must be submitted through the online submission system of the journal [https://www.editorialmanager.com/evos/](https://www.editorialmanager.com/evos/). Please choose article type "S.I.: Temporal Aspects in FCMs" when submitting your manuscript.
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