

## Call for Papers

### 2016 IEEE World Congress on Computational Intelligence

<http://wcci2016.org/index.php>

IEEE CEC 2016: The annual IEEE Congress on Evolutionary Computation

Special Session on:

**Bio-inspired and Evolutionary Computation methods for Unsupervised Learning**

(IEEE CEC-46)

#### Organizers

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#### A. The topic

This special session will be devoted to the study of new Bio-inspired and Evolutionary-based algorithms which have been applied into open, dynamic and complex problems where the application of Unsupervised Learning algorithms can provide new insights in these kind of domains. The special session will be particularly focused on the practical application of bio-inspired methods (evolutionary strategies, swarm intelligence methods, or nature-based approaches amongst others) and their application to unsupervised algorithms as Clustering (K-means, Hierarchical clustering, etc.), Grouping, Hidden Markov Models, or Latent variable models (EM algorithm, method of moments, ...) approaches to mention only some few. The application to real and complex scenarios, as community finding in very large social networks, data analysis in wireless sensor networks, real applications in industry and engineering, automatic and semi-automatic malware detection, energy, and so many others, will be welcomed. Therefore, the main goals of this special session will be two-fold: On the one hand, to look for new algorithms and techniques proposals based on Bio-inspired and EC, which have been successfully combined with other unsupervised approaches. On the other hand, to look for new application domains, and real problems, where the application of Bio-inspired and EC combined with unsupervised methods have demonstrated an outstanding performance against other traditional approaches.

Paper acceptance and publication will be judged on the basis of their quality and relevance to the symposium themes, clarity of presentation, originality and accuracy of results and proposed solutions.

## Scope and Topics

Topics include, but are not limited to:

- Theoretical models for Bio-inspired (evolutionary strategies, swarm intelligence algorithms, nature-based methods) approaches to unsupervised algorithms (grouping, clustering, HMM, Latent-based, etc.).
- Application of Evolutionary and Bio-inspired methods in Grouping and Clustering.
- Application of Evolutionary and Bio-inspired methods in HMM-based approaches.
- Application of Evolutionary and Bio-inspired methods for Latent-based models (factor analysis, PCA, ICA, mixture of gaussians,...)
- Hybridization and Application of Swarm Intelligence (ACO, PSO,...) methods in grouping, graph-based, clustering, HMM, statistical and other unsupervised learning algorithms.
- Bio-inspired and Evolutionary Computation strategies for Unsupervised Learning methods focused on semantic applications such as automatic summarization, recommender systems, topic identification, etc.
- Bio-inspired and EC Computation methods for Unsupervised Learning in real problems: social-based mining, counter-terrorism, energy, wireless sensor networks, malware detection and classification, videogames, unmanned systems, physics, biology, genomics, e-business/e-commerce, e-learning, e-health, e-science, e-government, crisis management, etc.
- Practical application of Unsupervised learning algorithms, based on Bio-inspired and Evolutionary Computation methods, in hot society and industry topics as: counter-terrorism, energy, climate, etc.

## **B. Submission Guidelines for Special Session Papers**

The authors intended to contribute to IEEE WCCI 2016 Special Sessions are kindly recommended to follow the manuscript style information and templates of regular IEEE WCCI 2016 papers (<http://wcci2016.org/submission.php>).

Please note that each Special Session is specifically and exclusively related to one of the three conferences composing the **IEEE WCCI 2016: IJCNN 2016, FUZZ-IEEE 2016, and IEEE CEC 2016**.

When submitting your manuscripts, authors are recommended to follow these steps:

- Identify the conference associated to the Special Session, for this session: **IEEE CEC 2016 (Submit Here)**
- Go to the related conference submission website (<http://ieee-cis.org/conferences/cec2016/upload.php>);
- Select the Special Session name in the Main Research topic dropdown list:
  - **7. Special Session**
  - **7bt. Bio-inspired and Evolutionary Computation methods for unsupervised learning**
- Fill out the input fields, upload the pdf file and finalize the submission before **January 15, 2016**.

## **C. Important deadlines**

**January 15, 2016 Paper submission deadline**

**March 15, 2016 Author notification of acceptance or rejection**

**April 15, 2016 Deadline for receipt of final manuscript**