

Final Call for Papers

The 10th International Conference on Advanced Computational Intelligence 2018

(Xiamen, China, March 29 – 31 2018, <http://www.icaci2018.org>)

Special Session: Computational Intelligence in Feature Selection, Feature Extraction and Dimensionality Reduction in Image and Pattern Recognition

Scope and Aim:

In image analysis and pattern recognition, the quality of the input data determines the quality of the output (e.g. accuracy), which is known as the GIGO (Garbage In, Garbage Out) principle. For a given problem, the input data to any machine learning or data mining algorithm is almost always expressed by a number of features (attributes or variables) showing different properties of the problem. Therefore, the quality of the feature space is a key for successfully solving any image analysis and pattern recognition problem.

Computational intelligence techniques, mainly evolutionary computation, neural networks, and fuzzy logic, have been shown to be effective tools in image analysis and pattern recognition. However, their performance is still limited or influenced when the feature space is of poor quality, which may be that the dimensionality is too high (i.e. the number of features is too big) leading to the "curse of dimensionality", features are not equally important, some features are irrelevant, redundant or even noisy, the original features are not informative enough, the features are not linearly separable, and so on. All these factors may lead to various performance limitations. For example in image classification problems, these will lead to low classification accuracy, a long training time, a complex classifier, etc.

The Special Session on Computational Intelligence in Feature Selection, Feature Extraction and Dimensionality Reduction in Image and Pattern Recognition aims to offer world-wide academic researchers in those fields as well as people from industry an opportunity to present their latest research and to discuss current developments and applications, besides fostering closer future interaction between members of the academic and industry communities. The special session welcomes contributions that investigate the new theories, methods or applications of different computational intelligence paradigms to feature analysis, selection, and learning in solving various image and pattern recognition tasks.

Topics:

Authors are invited to submit their original and unpublished work to this symposium.

Topics of interest include but are not limited to:

- Dimensionality reduction
- Feature ranking/weighting
- Feature subset selection
- Multi-objective feature selection
- Filter, wrapper, and embedded methods for feature selection
- Feature extraction or construction

- Single feature or multiple features construction
- Filter, wrapper, and embedded methods for feature extraction
- Multi-objective feature extraction
- Feature selection, extraction, and dimensionality reduction in image analysis, pattern recognition, classification, clustering, regression, and other tasks
- Feature selection, extraction, and dimensionality reduction on high-dimensional and large-scale data
- Analysis on evolutionary feature selection, extraction, and dimensionality reduction algorithms
- Hybridisation of evolutionary computation and neural networks, and fuzzy systems for feature selection and extraction
- Hybridisation of evolutionary computation and machine learning, information theory, statistics, mathematical modelling, etc., for feature selection and extraction
- Real-world applications of evolutionary feature selection and extraction, e.g. images and video sequences/analysis, face recognition, gene analysis, biomarker detection, medical data classification, diagnosis, and analysis, hand written digit recognition, text mining, instrument recognition, power system, financial and business data analysis, et al.

Important dates:

Deadline for submission of full papers: **10 Dec 2017**

Notification of acceptance: 15 Dec 2017

Deadline for camera-ready submission: 15 Jan 2018

Conference dates: 29-31 Mar 2018

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