Topical Collection - Call for Papers

Journal of Medical Systems

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Convergence of Deep Machine Learning and Nature Inspired Computing Paradigms for Medical Informatics

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Scope and Objectives:

Deep machine learning is an emergent area in the field of Computational Intelligence (CI) research concerned with the analysis and design of learning algorithms, representations of data, at multiple levels of abstraction. Deep learning is a technique for implementing
machine learning that provides an effective solution in health analytics that encompasses artificial intelligence, artificial neural network, reasoning, natural language processing, evolutionary algorithms, artificial immune systems, fractal geometry, DNA computing, and quantum computing, among others. These techniques will be more helpful to human intelligence system for handling uncertainty and subjective vagueness in decision making process. The new frontier research era convergence of deep machine learning and nature inspired computing with reference to medical informatics has three main streams needs to be addressed in the current state of scenario: e-health informatics, medical imaging, and smarter personalized health care. This topical collection has integrating machine learning, cognitive neural and nature inspired computing paradigms, advanced data analytics and optimization opportunities to bring more compute to the bio-medical engineering problems and challenges. Further, it is importance to make a note that deep machine learning, nature inspired computing and its intelligence techniques has not been adequately investigated from the perspective of bio-medical engineering research streams (e-health, medical imaging, and healthcare/personalized health) and its related research issues.

Furthermore, there are many noteworthy issues (health informatics, bio-medical imaging bio-medicine etc) that need to be addressed in the context of deep machine learning and nature inspired computing for medical informatics research area. Obviously, these challenges also create immense opportunities for researchers. For the aforementioned reasons, this topical collection focuses to address comprehensive nature of cognitive neural and nature inspired computing methodologies and to emphasize its character in human intelligence and learning systems, complex analysis tasks mimic human cognition and learning behaviour, prediction and control of bio-medical engineering systems. This topical collection intends to give an overview of state-of-the-art of issues and solution guidelines in the new era of deep machine learning and nature inspired computing paradigm and its recent trends of techniques for medical informatics. Proposed submissions should be original, unpublished, and present novel in-depth fundamental research contributions either from a methodological/application perspective in understanding the fusion of deep
machine learning paradigms and their capabilities in solving a diverse range of problems in for bio-medical engineering and its real-world applications.

**Topics of Interest:**

Topics include, but are not limited to the following:

- Parallel Machine Learning and Deep Learning approaches for E-Health
- Deep Randomized Neural Networks for Bio-Medical engineering applications
- Novel feature representation using deep learning, dictionary learning for face, fingerprint, ocular, and/or other biometric modalities
- Novel distance metric learning algorithms for biometrics modalities
- Machine learning techniques (e.g., Deep Learning) with cognitive knowledge acquisition frameworks for healthcare/personalized health systems
- Hybrid Deep learning and semi-supervised and transfer learning algorithms for medical imaging
- Biological plausibility/inspiration of Randomized Neural Networks for Digital Health
- Nature inspired computing design and development for medical informatics
- Hybrid Nature-Inspired Computing Methods for bio-medicine
- Genomic data visualisation and representation for medical information
- Applications of deep learning and unsupervised feature learning for prediction of sustainable engineering tasks.
- Inference and optimization with bio-medical engineering problems

**Paper Solicitation**

Papers must be tailored to the emerging fields of deep learning neural and nature inspired computing paradigms for bio-medical engineering and explicitly considers the recent deployments models, challenges, and novel solutions. The guest editors maintain the right to reject papers they deem to be out of scope of this topical collection. Only originally unpublished contributions and invited articles will be considered for the issue. Each paper
will go through a rigorous peer-review process by at least three international reviewers. Please make sure to select the “SI: CDMLNICP: Medical Informatics” option for the type of the paper during the submission process. Any queries related to this topical collection should be addressed contact corresponding editor: Dr. Arun Kumar Sangaiah (arunkumarsangaiah@gmail.com)

### Important Dates

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<td>Submission of papers to the journal due</td>
<td>August 15, 2017</td>
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<tr>
<td>First round review results</td>
<td>October 15, 2017</td>
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<td>Revised papers due for submission</td>
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