Call for Papers
21ˢᵗ INTERNATIONAL WORKSHOP ON
LEARNING CLASSIFIER SYSTEMS (IWLCS 2018)

to be held at GECCO 2018 in Kyoto, Japan (July 15 to July 19, 2018)

In the research field of *Evolutionary Machine Learning* (EML), *Learning Classifier Systems* (LCS) provide a powerful technique which received a huge amount of research attention over nearly four decades. Since John Holland's formalization of the *Genetic Algorithm* (GA) and his conceptualization of the first LCS – the *Cognitive System 1* (CS-I) – in the 1970's, the LCS paradigm has broadened greatly into a framework encompassing many algorithmic architectures, knowledge representations, rule discovery mechanisms, credit assignment schemes, and additional integrated heuristics. This specific kind of EML technique bears a great potential of applicability to various problem domains such as behavior modeling, online-control, function approximation, classification, prediction, and data mining. Clearly, these systems uniquely benefit from their adaptability, flexibility, minimal assumptions, and interpretability. According to the working principle of LCS, one could also understand a generic LCS as an *Evolving Ensemble* of local models which in combination obtain a problem-dependent prediction output. This raises the question: How can we model these classifiers? Or put another way: Which kind of machine learning and evolutionary computation algorithms can be utilized within the well-understood algorithmic structure of a LCS? This workshop opens a forum for ongoing research in the field of LCS as well as for the design and implementation of novel LCS-style EML systems, that make use of evolutionary computation techniques to improve the prediction accuracy of the evolved classifiers. Furthermore, it shall solicit researchers of related fields such as (*Evolutionary*) *Machine Learning*, (*Multi-Objective*) *Evolutionary Optimization*, *Neuroevolution*, etc. to bring in their experience. In the era of *Deep Learning* and the recently obtained successes, topics that have been central to LCS for many years, such as human interpretability of the generated models ("*Explainable AI*"), are now becoming of high interest to other machine learning communities. Hence, this workshop serves as a critical spotlight to disseminate the long experience of LCS in these areas, to attract new interest, and expose the machine learning community to an alternate advantageous modeling paradigm.

TOPICS OF INTEREST INCLUDE BUT ARE NOT LIMITED TO:

* New approaches for classifier modelling (e.g. ANN, GP, SVM, RBFN,…)
* New means for the partitioning of the problem space (ensemble formation, condition structures, …)
* New ways of classifier mixing (combination of local predictions, ensemble voting schemes)
* Evolutionary Reinforcement Learning (Learning Classifier Systems, Neuroevolution, …)
* Theoretical developments in LCS (behavior, scalability and learning bounds, ...)
* Explainable AI, i.e. interpretability of evolved knowledge bases
* Paradigms of LCS (Michigan, Pittsburgh, ...)
* Applications (data mining, cognitive control, medical domains, bioinformatics, intelligence in games, ...)
* Optimizations and parallel implementations (GPU, matching algorithms, …)
* Other Evolutionary Rule-Based Machine Learning systems (Artificial Immune Systems, Evolving Fuzzy Rule-based Systems)
* **… further topics listed at our IWLCS website** http://itslab.csce.kyushu-u.ac.jp/~vargas/iwlcs_2018/ **(or scan/click QR-code)**

IMPORTANT DATES:
Submission deadline (**extended**):   **April 03, 2018**
Decision notification: **April 10, 2018**
Camera-ready version: **April 20, 2018**

SUBMISSION INSTRUCTIONS:
Papers should be written in English
Papers' format should conform to GECCO's submission guidelines
Papers should not exceed **8 pages** (full paper) or **4 pages** (short paper)
Submissions are managed via GECCO's submission system Linklings

WORKSHOP ORGANIZATION:
Danilo Vasconcellos Vargas, Kyushu University (JPN)
Masaya Nakata, Yokohama National University (JPN)
Anthony Stein, University of Augsburg (DE)

PROGRAM COMMITTEE:
Jaume Bacardit – Lashon B. Booker – Will Browne – Larry Bull – Martin V. Butz – Ali Hamzeh – Luis Miramontes Hercog – Muhammad Iqbal – Karthik Kuber – Pier Luca Lanzi – Daniele Loiacono – Masaya Nakata – Kamran Shafi – Anthony Stein – Wolfgang Stolzmann – Ryan J. Urbanowicz – Danilo V. Vargas – Stewart W. Wilson – (to be completed)

IWLCS website