Call for papers - Special Issue
Automation in AI and Machine Learning

IEEE TRANSACTIONS ON
PATTERN ANALYSIS AND
MACHINE INTELLIGENCE

Nowadays, the success of decision support systems crucially relies on human experts involved in all systems design stages. Commonly, humans take critical decisions that include: converting real world problems into AI and/or machine learning problems, data collection, feature engineering, selecting or designing model architectures, tuning model hyper-parameters, evaluating model performance, deploying on-line systems, and so on. The complexity of these tasks, which is often beyond non-experts, together with the rapid growth of applications, have motivated a demand for off-the-shelf AI and machine learning methods that can be used easily and without expert knowledge. This progress, together with the relevance of the subject make us think that we are in the perfect time to capture a snapshot of the state of the art in Automatic AI and Machine Learning through a TPAMI Special Issue.

Scope.

All aspects of automation in AI and machine learning, with special interest in AutoML. Topics of interest include, but are not limited to:

- Model selection, hyper-parameter optimization, and model search
- Neural architecture search (AutoDL)
- Meta learning and transfer learning
- Derivative-free optimization
- Automatic feature extraction / construction
- Automatic generation of workflows / workflow reuse
- Automatic problem "ingestion" (from raw data and miscellaneous formats)
- Automatic feature transformation to match algorithm requirements
- Automatic detection and handling of skewed data and/or missing values
- Automatic acquisition of new data (active learning, experimental design)
- Automatic report writing (providing insight on automatic data analysis)
- Automatic selection of evaluation metrics / validation procedures
- Automatic selection of algorithms under time/space/power constraints
- Automatic prediction post-processing and calibration
- Automatic leakage detection
- Automatic inference and differentiation
- User interfaces and human-in-the-loop approaches for AutoML

- Automatic machine learning in the lifelong learning setting.
- Automatic model generation for evolving data streams.
- AutoML in the presence of concept drift.
- Hyper-heuristics
- Automatic hybridization of search techniques
- Automatic operator creation for optimization and search methods
- Automatic heuristic generation
- Automatic Semi-Supervised Learning

Submissions.

Submissions will be processed through the TPAMI Scholar One submission system, see: `https://mc.manuscriptcentral.com/tpami-cs` (select the SI:AutoML option), and they will be subject of the usual strict reviewing process of the journal.

We prefer relatively short communications (of the order of 20 pages plus extra pages for references and appendices including proofs or experimental details).

Important dates.

- *October 1st, 2019*: Submission system open for submissions.
- *March 15th2020*: Deadline for paper submission.

Guest editors (alphabetic order)**.**

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