



Automating the resolution of information system incidents using efficient Machine Learning algorithms

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Abstract:

Automated ML is a set of methods that allow non-experts to use Machine Learning so easily, to ameliorate its efficiency and to dig more in their researches. Machine learning knew recently a big success and an ever-growing number of fields rely on its performance. Nevertheless, this success is based on human machine learning experts to do some tasks manually. Moreover, because these tasks are complex, especially for non-ML-experts, a rapid growth of machine learning applications has appeared and the demand for ML methods and processes that is handy and simple to use is more and more important.

The design of an effective ML requires expert's knowledge to improve algorithms in order

to optimize results. So how can we use, for example, K-fold cross-validation to look for an optimal tuning parameter? And how can this process be made more efficient? The idea of machine learning pipeline is based on the automation of machine learning workflows. It consists on training a given model through several steps. However, we can remark that the word 'pipeline' refers to one-way flow of data which is not the case of ML pipelines. In this context, machine learning pipelines rely on repetition of steps and continuous improvement of learning which make them very cyclical and iterative. Therefore, we get successful algorithms and models with good accuracy. The development of the Tree-based Pipeline Optimization Tool (TPOT) recently allows the optimization and the automatic design of the machine learning pipelines when given a problem to deal with without human participation. Therefore, how can we optimize machine learning pipelines using TPOT and a version of genetic programming? which is an automated method for creation of computer programs from a high-level problem statement of a problem. To see how to optimize the automatic design of machine learning pipelines, we will put all these algorithms into practical application to manage the information system incidents of one the insurance leaders in the world.

Biography:

Hind LBAHY has completed double engineering degrees of



two prestigious engineering Schools, Ecole des Mines de Rabat in Morocco and Ecole des Mines de Saint Etienne in France (Data Science discipline) and a Master degree in Applied Mathematics at the age of 24. She is completing her studies at Paris-Dauphine University and Ecole Normale supérieure of Paris by doing a research master in Artificial Intelligence in parallel with her work as a Data Scientist.

Publication of speakers:

1. Ms Hind LBAHY, Microstructure characterizations, thermal properties, yield stress, plastic viscosity and compression strength of cement paste modified with nanosilica, *Journal of Materials Research and Technology*, Volume 9, Issue 5, September–October 2020, Pages 10941-10956
2. Ms Hind LBAHY, Read-across can increase confidence in the Next Generation Risk Assessment for skin sensitization: A case study with resorcinol, *Regulatory Toxicology and Pharmacology*
3. Available online 13 August 2020, 104755, In Press, *Journal Pre-proof* What are Journal Pre-proof articles?
4. Ms Hind LBAHY, Psychological status of healthcare workers during the civil war and COVID-19 pandemic: A cross sectional study, *Journal of Psychosomatic Research*, Volume 137, October 2020, 110221
5. Ms Hind LBAHY, Influence of oxygen percentage on in vitro bioactivity of zirconia thin films obtained by RF magnetron sputtering, *Applied Surface Science*, Volume 532, 1 December 2020, 147403

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