Contributions to the Conception of Distributed Platforms Based on *Deep Learning* and Case-Based Reasoning

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March 2, 2021

Abstract:

Deep Learning is a paradigm which proposes remarkable tools (Artificial Neural Networks, Convolutional Neural Networks). These tools allow automatic creation of rules for classification which are not obvious a priori. Unfortunately, they must be trained over large sets of data before being able to interpolate properly. Actually, they can only give back rules from the experiments they have experienced themselves. On the contrary, systems based on *Case-Based Reasoning* (*CBR*) can integrate and apply other types of knowledge: rules, theoretical and pratical knowledge, vocabulary. However, all these types of knowledge must be explicit and thus must be understandable. Thus, creating systems which associate tools from these two complementary paradigms is beneficial, the strengths of one overcoming the weaknesses of the other. This talk will present scientific contributions with different manners to associate tools from *Deep Learning* and CBR paradigms in order to give solutions to experts of Health, imagery, education and monitoring. Considering the emergence of the *Internet of objects* and captors which are now capable of analysing perceived data themselves, the integration of tools of these two paradigms inside these captors appears to be an advantage and offers interesting perspectives.

Topics/keywords:

Case-Based Reasoning, *Deep Learning*, Distributed Artificial Intelligence, Adaptation, Medical Diagnosis.