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Novel Class Detection with Concept Drift in Data Stream - AhtNODE

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Abstract:
Data stream mining has become an interesting analysis topic and it is a growing interest in data discovery method. There are several applications supporting stream data processing like device network, electronic network, etc. Our approach AhtNODE (Adaptive Hoeffding Tree based NOvel class DEtection) detects novel class in the presence of concept drift in streaming data. It addresses there are three challenges of streaming data: infinite length, concept drift, and concept evolution. This approach automatically detects the novel class whenever it arrives in the data stream. It is a multi-class approach that distinguishes novel class from existing classes. The authors tend to apply the Adaptive Hoeffding Tree as a classification model that is also used to handle the concept drift situation. Previous approaches used the ensemble model to handle concept drift. In AHT, classification is done in the single pass. The experiment result proves the effectiveness of AhtNODE compared to existing ensemble classifier in terms of classification accuracy, speed and use of memory.

Link: https://ideas.repec.org/a/igg/jdst00/v11y2020i1p15-26.html