

Sin activation structural tolerance of online sequential circular extreme learning machine

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Abstrak

This article discusses the development of the online sequential circular extreme learning machine (OS-CELM) and structural tolerance OS-CELM (STOS-CELM). OS-CELM is developed based on the circular extreme learning machine (CELM) to enable sequential learning. It can update a new chunk of data by spending less training time to update the chunk than the batch CELM. STOS-CELM is developed based on an idea similar to that of OS-CELM, but with a Householder block exact inverse QR decomposition (QRD) recursive least squares (QRD-RLS) algorithm to allow sequential learning and mitigate the criticality of deciding the number of hidden nodes. In addition, our experiments have shown that given the same hidden node setting, STOS-CELM can deliver accuracy comparable to a batch CELM approach and also has higher accuracy than the original online sequential extreme learning machine (OS-ELM) and structural tolerance OS-ELM (STOS-ELM) in classification problems, especially those involving high dimension datasets.