Complexity and Stability Optimization for ELM Based on Parameter Diversity

As a simple learning algorithm for neural network training, extreme learning machine (ELM) has been applied due to its great performance. However, ELM has the shortage of instability, especially for the large size datasets. Although ensemble extreme learning machine (EN-ELM) has overcome the problem of instability, the computational time increases dramatically. In this paper, we aim to optimize the complexity and stability simultaneously. Firstly, diversity ensemble extreme learning machine (DEN-ELM) is proposed to reduce the computational time and improve the stability, which incorporates the diversity measure into EN-ELM. Based on DEN-ELM, a parameter diversity ensemble extreme learning machine (PDE-ELM) model with diversity prior is proposed to reduce the redundancy and improve the robustness by replacing the ensemble diversity by parameter diversity. Experimental results on nine UCI datasets demonstrate the efficiency and stability of the proposed algorithms.

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All are welcome!

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