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Enhancement web proxy cache performance using Wrapper Feature Selection methods with NB and J48

(Conference Paper)

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Abstract

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Web proxy cache technique reduces response time by storing a copy of pages between client and server sides. If requested pages are cached in the proxy, there is no need to access the server. Due to the limited size and excessive cost of cache compared to the other storages, cache replacement algorithm is used to determine evict page when the cache is full. On the other hand, the conventional algorithms for replacement such as Least Recently Use (LRU), First in First Out (FIFO), Least Frequently Use (LFU), Randomized Policy etc. may discard important pages just before use. Furthermore, using conventional algorithm cannot be well optimized since it requires some decision to intelligently evict a page before replacement. Hence, most researchers propose an integration among intelligent classifiers and replacement algorithm to improves replacement algorithms performance. This research proposes using automated wrapper feature selection methods to choose the best subset of features that are relevant and influence classifiers prediction accuracy. The result present that using wrapper feature selection methods namely: Best First (BFS), Incremental Wrapper subset selection(IWSS)embedded NB and particle swarm optimization(PSO)reduce number of features and have a good impact on reducing computation time. Using PSO enhance NB classifier accuracy by 1.1%, 0.43% and 0.22% over using NB with all features, using BFS and using IWSS embedded NB respectively. PSO rises J48 accuracy by 0.03%, 1.91 and J48 classifiers much more than BFS and PSO. However, it reduces computation time of NB by 0.1383 and reduce computation time of J48 by 2.998.

Author keywords

intelligent classifiers | replacement algorithms | web cache | wrapper feature selection

Indexed keywords

Engineering controlled terms: Classification (of information) | Feature extraction | Optimization | Particle swarm optimization (PSO)

Compendex keywords: Cache replacement algorithm | Conventional algorithms | Feature selection methods | Intelligent classifiers | Prediction accuracy | Randomized policies | Replacement algorithm | Web Cache

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