

An End-to-End Automatic Cache Replacement Policy Using Deep Reinforcement Learning

Yang Zhou, Fang Wang, Zhan Shi, Dan Feng

Email contact: zhouyang1024@hust.edu.cn

This work is supported in part by NSFC No.61832020, No.61821003, and No.82090044

Motivation

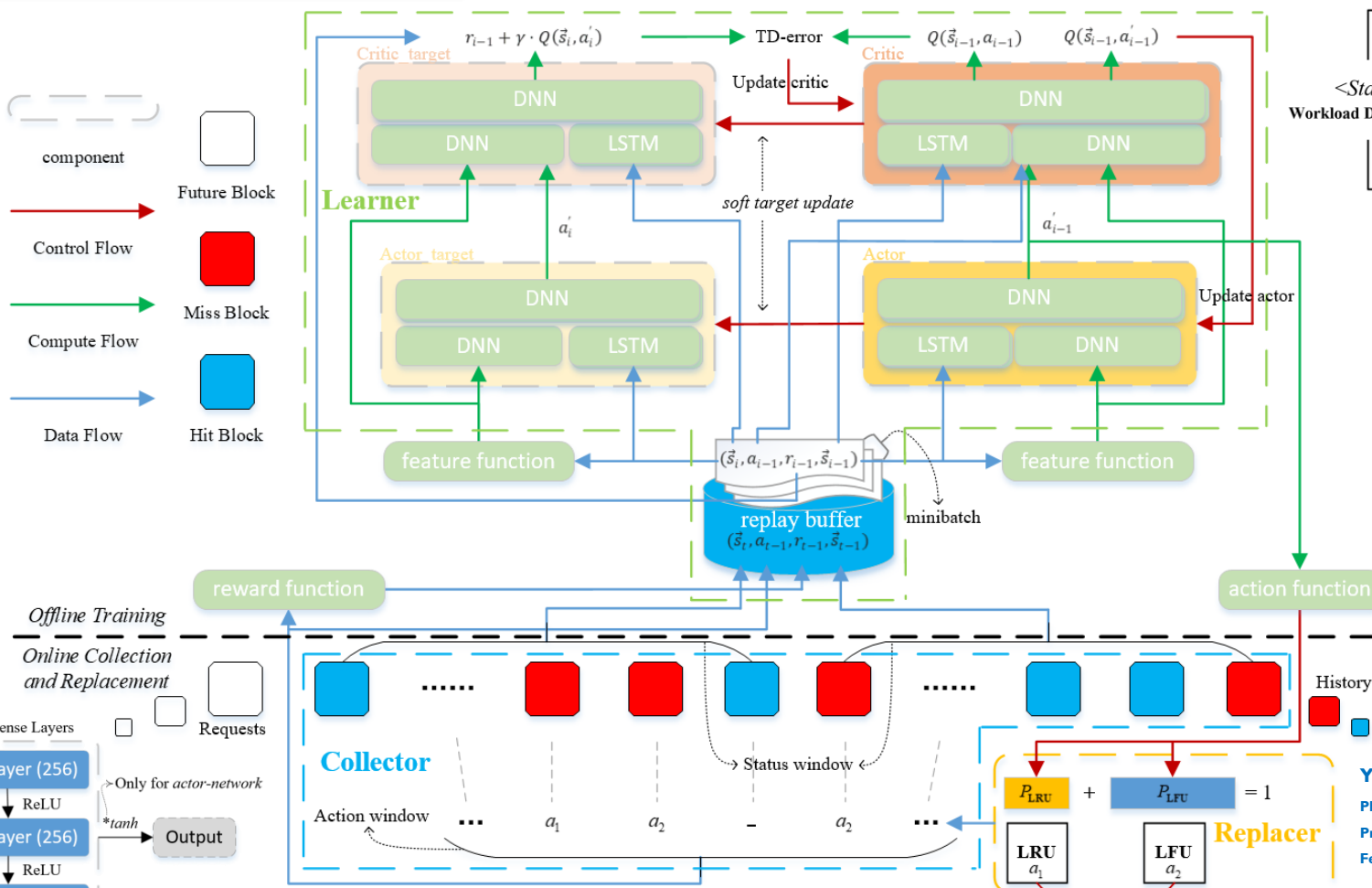
Recency and frequency have good **orthogonality**



Workload Distribution
State Modeling

Recency and Frequency
Decision-Making Process

Deep Reinforcement Learning



Design

State Vector

- Request addresses
- Statistical features

Action

- The ratio of LRU

Reward

- Consider changes in state and action over time
- Use independent LRU and LFU as the baseline replacement policies

Yang Zhou

PhD Candidate @ Huazhong University of Sci. & Tech
Professional Membership @ China Computer Federation (CCF)

Dependable Systems (ICPP, ACM ToS)
Smart Cache Technology (ICAPS)
Prerequisite Relations (IJCNN, MSN)

