

Preface

The need for this book stems from the sheer amount of modern web traffic coupled with increases in cacheable, bandwidth-consuming multimedia objects. In this book, we provide the most comprehensive study for proxy cache replacement strategies. We categorize these strategies into four categories; recency-based, frequency-based, recency/frequency-based, and function-based. We provide a quantitative comparison of cache replacement strategies on the category level and then compare the best strategies of each category based on very important performance metrics. We then diverge from these replacement policies by constructing a model, represented in the weights and structure of a neural network, from actual web traffic. This approach has the advantage of incorporating subtle traffic pattern information which may be difficult for a human to discern when designing a top-down algorithm. Furthermore, we provide a single method which is capable of creating multiple models; this allows models to be created which target localized traffic patterns as well as general ones. We first provide the simulation architecture, setup, parameters, and results of this novel technique then we explain the implementation details in the Squid proxy server.

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