A

Project Report

On

MAPPING BUG REPORTS TO RELEVANT FILES:A RANKING MODEL,A FINE-GRAINED BENCHMARK,AND FEATURE EVALUTION

Submitted to

Department of
Computer Science and Engineering

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the project entitled "**MAPPING BUG REPORTS TO RELEVANT FILES:A RANKING MODEL,A FINE-GRAINED BENCHMARK,AND FEATURE EVALUTION**" is submitted by BEJJANKI SAMADHARSHINI(206Y1A6605), JULAPELLY VARSHA(206Y1A6624), CHERALA LIKHITHA(206Y1A6608) and PENDHOTA LLAXXMI PRASANNA(206Y1A6642) to the department of Computer Science and Engineering during academic year 2022-23.

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ABSTRACT

Overlay Routing is a very attractive scheme that allows improving certain properties of the routing (such as delay or TCP throughput) without the need to change the standards of the current underlying routing. However, deploying overlay routing enquires the placement and maintenance of overlay infrastructure. This gives rise to the following optimization problem: Find a minimal set of overlay nodes such that the required routing properties are satisfied. In this paper, we rigorously study this optimization problem. We show that it is NP-hard and derive a nontrivial approximation algorithm for it, where the approximation ratio depends on specific properties of the problem at hand. We examine the practical aspects of the scheme by evaluating the gain one can get over several real scenarios. The first one is BGP routing, and we show, using up-to-date data reflecting the current BGP routing policy in the Internet, that a relative small number of less than 100 relay servers is sufficient to enable routing over shortest paths from a single source to all autonomous systems (ASs), reducing the average path length of inflated paths by 40%. We also demonstrate that the scheme is very useful for TCP performance improvement (results in an almost optimal placement of overlay nodes) and for Voice-over-IP (VoIP) applications where a small number of overlay nodes can significantly reduce the maximal peer-to-peer delay.

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