Abstract

Abstract— One of the challenges faced by emerging IT micro, small, and medium-sized enterprises (MSMEs) and IT startups in Indonesia is optimizing their database system. Problems with computing resource usage and data access impede the smooth operation of their systems. To solve this problem, we will use probabilistic data structure filter to reduce load to database instance. We compared the efficiency of various data filters, including the Bloom filter and its derivative (classic, partitioned, counting), cuckoo filter, and xor filter. The methodology used in this study involved using a random generated transaction dataset and several techniques to measure the efficiency of the filters within three parameters: computing time, cost, and resources. The results of this comparison provide valuable insights for IT MSMEs and IT startups in Indonesia, helping them to make informed decisions about its system's database optimization through filter and ultimately contributing to their respective company's growth.