
AIBENCH:
AN INDUSTRY STANDARD INTERNET SERVICE
AI BENCHMARK SUITE

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AIBench: An Industry Standard Internet Service AI Benchmark Suite

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Abstract

Today's Internet Services are undergoing fundamental changes and shifting to an intelligent computing era where AI is widely employed to augment services. In this context, many innovative AI algorithms, systems, and architectures are proposed, and thus the importance of benchmarking and evaluating them rises. However, modern Internet services adopt a microservice-based architecture and consist of various modules. The diversity of these modules and complexity of execution paths, the massive scale and complex hierarchy of datacenter infrastructure, the confidential issues of data sets and workloads pose great challenges to benchmarking.

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In this paper, we present the first industry-standard Internet service AI benchmark suite—AIBench with seventeen industry partners, including several top Internet service providers. AIBench provides a highly extensible, configurable, and flexible benchmark framework that contains loosely coupled modules. We identify sixteen prominent AI problem domains like learning to rank, each of which forms an AI component benchmark, from three most important Internet service domains: search engine, social network, and e-commerce, which is by far the most comprehensive AI benchmarking effort. On the basis of the AIBench framework, abstracting the real-world data sets and workloads from one of the top e-commerce providers, we design and implement the first end-to-end Internet service AI benchmark, which contains the primary modules in the critical paths of an industry scale application and is scalable to deploy on different cluster scales. The preliminary evaluation has shown the value of our benchmark suite with respect to the previous documented performance models and insights without the publicly available ensemble of Internet service data sets, workloads and user logs. The specifications, source code, and performance numbers are publicly available from the benchmark council web site <http://www.benchcouncil.org/AIBench/index.html>.