Reusing Performance Data Across System Versions for Automatic Database Configuration Tuning

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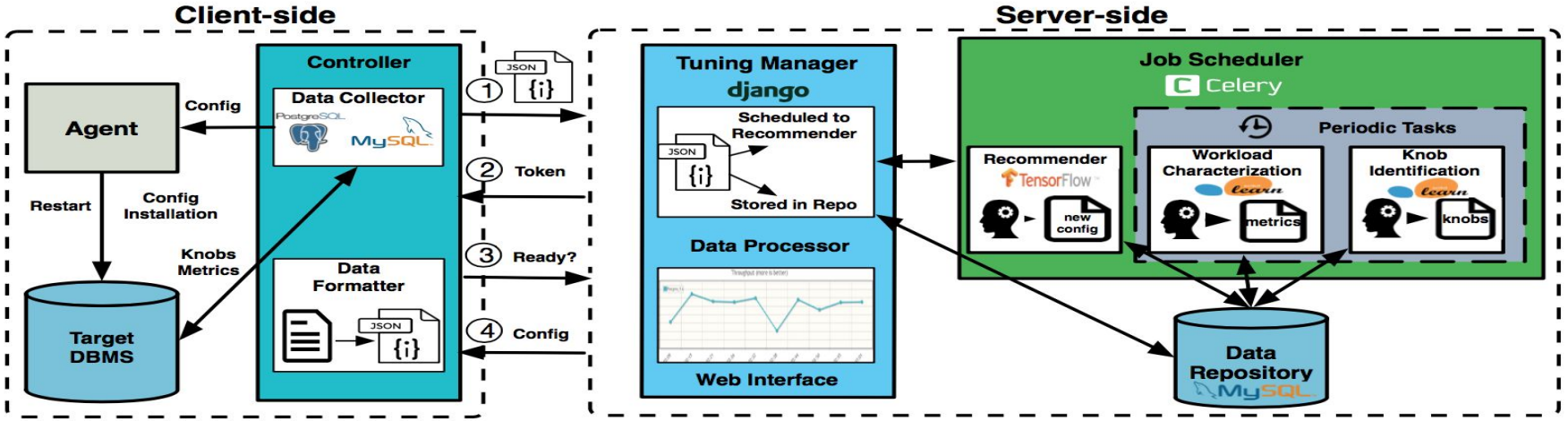
Introduction

Database management systems (DBMSs) have hundreds of tunable knobs that control almost everything in the system. The performance of a DBMS is highly dependent on these configuration knobs, but tuning is usually done manually.

The problem of tuning DBMS configuration knobs could be modeled as a hyperparameter tuning problem in a traditional machine learning setting. We introduce OtterTune, a database management system which applies traditional optimizers for hyperparameters tuning for hyperparameter tuning into tuning DBMSs knobs and automatically recommends new configurations to users. We show that OtterTune could efficiently improve the performance of DBMSs.



OtterTune Link: ottertune.cs.cmu.edu

OtterTune Performance

We did experiments on tuning knobs of Postgres DMBSs. The right figure shows an example of how OtterTune improves the throughput of Postgres 9.3 over time.

Next Step

Another way of reducing the cost of tuning DBMSs configuration knobs is by transferring knowledge of tuning prior versions of DBMS to tuning a new version.

We would like to explore the effect of using collected data from DBMS version A to tuning DBMS version B. We want to apply existing transfer learning methods, e.g. transferring Gaussian Process models, to tuning DBMS knobs across versions.