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(57) Abstract :

A self-optimizing database management system comprises a database engine (101), a telemetry collector (102), a workload profiler (103), a machine learning optimizer (104), a policy governor (105), an execution controller (106), a knowledge repository (107), and an evaluation module (108). Runtime metrics are transformed into workload signatures, candidate tuning actions are generated through learned inference, and validated actions are selectively deployed under policy control. Measured outcomes are fed back for continual refinement, enabling adaptive indexing, memory management, scheduling, and execution tuning with improved operational efficiency and controlled risk.

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