

Machine Learning in Oracle Database

For over twenty years, Oracle has provided machine learning capabilities in Oracle Database. Today, that wealth of experience enables Oracle to deliver superior machine learning functionality with over 30 algorithms that are built directly into the database kernel. Autonomous Database users can access these algorithms through Oracle Machine Learning Notebooks, and Oracle Database users can access these algorithms directly from SQL via Oracle Machine Learning for SQL, R via Oracle Machine Learning for R, and Oracle Data Miner. All can be used to create and deploy machine learning solutions that execute in Oracle Database.

WHAT'S DIFFERENT ABOUT ORACLE MACHINE LEARNING IN THE DATABASE?

Machine learning can uncover incredible insights. But for that to happen, organizations need to get the components affecting machine learning projects to work well. Performing machine learning in the database aids this goal in several ways. Not moving data into another platform eliminates the time required to extract and then load the data, as well as improve security. Building and storing models in Oracle Database simplifies model deployment, which means reaping the benefits of machine learning projects sooner and with less overhead. Running machine learning in Oracle Database means that organizations can gain results without additional tools, infrastructure, and their associated costs.

With Oracle Machine Learning, your in-house users can:

- Choose from multiple techniques to build machine learning models, which enables data scientists to solve a wide variety of business problems
- Create machine learning-based products that are easily consumed in your BI solution
- Use a robust set of machine learning algorithms, optimized for Oracle, to support a wide variety of use cases without having to move data to separate systems first
- Lower the total cost of ownership since you won't need separate analytical servers and the added complexity when deploying and maintaining solutions

All this can happen without a data management headache, allowing users to focus on finding value in their data. With Oracle Machine Learning, organizations can avoid the cost of additional tools and infrastructure while also speeding analysis and time to results.

WHAT DO USERS GET FROM ORACLE MACHINE LEARNING?

Oracle Machine Learning was specifically designed to work with your data management systems and appeal to multiple users across your organization. Here's what they get:

Data scientists

- Use popular data science languages, notebooks, and "drag and drop" user interface to develop, test, and refine machine learning models and data science solutions.

Business and data analysts

- Expand analytical skills and leverage Oracle Machine Learning algorithms to extract more information, create predictions, and discover new insights.

"We chose Oracle because the solution could cope with very large data volumes running into billions of rows and could scale as volumes increase. In addition, the Oracle solution required no IT team support to run the queries, which enables our team of data analysts to be self-sufficient."

Nina Monkton
*Head of Information Services
NHS Business Services Authority*

Solution:

Oracle Machine Learning Notebooks, included in Autonomous Data Warehouse

Oracle Machine Learning for SQL, Oracle Machine Learning for R, and Oracle Data Miner, included in Oracle Database Cloud High and Extreme Editions

- Oracle Machine Learning for SQL
- Oracle Data Miner "workflow" UI (for Citizen Data Scientists) a SQL Developer extension
- Oracle Machine Learning for R supporting in-database data manipulation, analysis, machine learning, and deployment from the open source R language

DBAs and IT professionals

- Apply valuable IT skills to generate even more value from your company's Oracle environment. Manage and analyze data all in the same data management platform.

Application developers

- More easily build applications that embed machine learning model insights and predictions. Collaborate with key players while automating and disseminating results.

Executives

- Make better data-driven decisions. Accelerate the productivity of analytics teams and deploy machine learning solutions faster. Democratize machine learning so the organization can better compete and realize significant savings and higher profitability.

WHAT IS ORACLE MACHINE LEARNING NOTEBOOKS?

Oracle Machine Learning Notebooks is a notebook interface for data scientists to perform machine learning using the Oracle Machine Learning for SQL API in Oracle Autonomous Data Warehouse. Notebook technologies support the creation of scripts while allowing users to document assumptions, approaches, and rationale, all while increasing data science team productivity.

These notebooks, based on Apache Zeppelin technology, enable teams to collaborate to build, evaluate, and deploy predictive models and analytical methodologies in Oracle Autonomous Data Warehouse. Multi-user collaboration enables the same notebook to be opened simultaneously by different users. Changes made by one user are immediately visible to other team members.

WHAT ARE ORACLE MACHINE LEARNING FOR R, ORACLE MACHINE LEARNING FOR SQL, AND ORACLE DATA MINER?

Oracle Machine Learning for R, Oracle Machine Learning for SQL, and Oracle Data Miner are components of the Oracle Machine Learning family of products.

Here's what they are:

- Oracle Machine Learning for SQL: a SQL API for in-database machine-learning algorithms and related functionality. Available for ADW and Oracle Database.
- Oracle Data Miner: a "drag and drop" user interface for graphically building analytical workflows, accessed as a SQL Developer extension. Available for use with Oracle Database.
- Oracle Machine Learning for R: an R interface to in-database machine learning algorithms, along with transparent manipulation of database tables from R and the ability to invoke user-defined R functions at the database server from both R and SQL. Available for use with Oracle Database.

CONCLUSION

Today, you need data-driven decision making that's augmented with machine learning to stay competitive. But with Oracle Machine Learning, you can "have your data and analyze it too," with machine learning that's highly integrated with your data management platform—Oracle Database. Democratize machine learning and data science across your enterprise and give user tools to rapidly extract insights and deploy machine learning to start creating impact today.

Integrated Cloud Applications & Platform Services

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