Oracle Analytics Cloud leverages machine learning to enable human insight
Ovum view

Summary

Machine learning was a central theme to the announcements at Oracle OpenWorld 2017. From the new Oracle 18c autonomous database to Oracle's highly automated security offerings, automation via machine learning was posited as a key driver of efficiency and cost savings. But in the realm of analytics, and the Oracle Analytics Cloud in particular, these advanced features do not threaten the roles of humans; rather, they augment them via advancing simpler access to insights. Machine learning is being used in the Oracle Analytics Cloud environment to expand insights consumption, power deeper insights, and accelerate time to insight. By automating many of the rote and repetitive tasks associated with data manipulation, Oracle Analytics Cloud is enabling humans to focus on uniquely cognitive tasks such as interpretation of data and social interaction.

Machine learning helps reach a larger audience of users

Oracle's overarching vision for its Analytics Cloud is to power all actions to be data-driven, and at the Oracle OpenWorld event, the company outlined three supporting pillars to that vision: expand insights consumption, power deeper insights, and accelerate time to insight. The first pillar, expanding insights consumption, has been easier said than done within the enterprise. In the analytics space, self-service is no longer a differentiator; all leading products have tools and features catered toward allowing users to access their own data without heavy dependence on IT. But this has only modestly expanded the audience of habitual data consumers within the enterprise. For all the advances that have been made in self-service data visualization, most tools are still designed with business analysts in mind as the target user audience. These users are already familiar with in-depth data manipulation and handling of variables, with consumer-oriented interfaces simply accelerating their time to insight; they still need to know what they are looking for in the data.

But when it comes to business leadership, and business users that are less data savvy, the market has been slower to respond in the creation of features that truly help deliver value. Oracle is trying to change that with its Oracle Analytics Cloud, leveraging machine learning and natural language processing (NLP) and natural language generation (NLG) to ensure that users of all skill levels can extract insight from data quickly, even if they don't know exactly where to start. Keys to expanding the analytics audience beyond traditional analysts include providing tools that help highlight what data to look at, helping users visualize it, and helping guide users in creating a story from the data.

Oracle Analytics Cloud, in its roadmap, is squarely focused on creating functionality to cater to this currently underserved audience of business leadership and non-analyst users. One of its chosen routes to delivering value to these users is to better help them find and interact with data via natural language, as opposed to simply guiding them to pick the right data. Oracle is fleshing out and expanding the NLP capabilities of its "BI Ask" search functionality, which already uses NLP, to include autocorrection for natural language queries on the fly, as well as recognition for abbreviations, synonyms, and other quirks of business language. Voice recognition, which is already available for the BI Ask functionality on the "Day by Day" mobile app, uses machine learning to identify relevant terms and generate visualizations from available data that match the natural language query.
The "Day by Day" mobile app accompaniment to the Oracle Analytics Cloud environment is a particularly good example of using machine learning to expand the scope of analytics consumption beyond the business analyst community. The app presents insights, data, visualizations, and social activity according to variables such as the user's interests and current location, and is constantly being improved; by using machine learning, the activity feed hones over time to better anticipate the user's exact appetite for data types and insights without them having to filter through modern volumes of data. Because the environment itself generates large amounts of metadata from user interactions, these too are used to train machine learning models to further improve the custom feed, so that users always have actionable insights at their fingertips without having to manually search or manipulate large volumes of data.

Machine learning seeks to eliminate human bias in analytics

Volume of data – and isolating signal from noise – is one of the greatest challenges for modern analytics initiatives. With multiple analysts working on the same set of data, the correlations and relationships they find may be entirely different depending on how they decide to slice and dice the data. Variables that are sought out and compared may be influenced by an analyst's past experiences, hunches, time available, and pure luck. There is inherent human bias in the process.

Oracle Analytics Cloud looks to leverage machine learning to eliminate human bias in the analysis process. It allows the analyst to select an attribute of interest (such as attrition rate at the company) and automatically analyzes all the possible variables, rather than depending on the analyst to blindly pick and choose variables to examine. Machine learning excels at uniformly assessing large sets of data for relationships and correlations: something humans cannot do consistently for today's volumes of data. By removing the variability of human guesswork in the process of searching for correlations, Oracle Analytics Cloud allows users to focus more on the direct interpretation of data and insights. Instead of just searching for data to support a hypothesis, users can allow the data to create a story of its own, and follow its lead.

Machine learning is also used for several other features within the Oracle Analytics Cloud environment, all with the purpose of supporting the three pillars of Oracle's analytics vision: expand insights consumption, power deeper insights, and accelerate time to insight. Missing data, such as zip codes, can be filled in using machine learning, bot traffic can be identified, fuzzy name matching can generate recommendations based on close matches, and data can be extracted directly from images. By allowing analysts and other users to focus their attention on data that has been pre-identified to be likely relevant, less guesswork and bias enters the equation of sifting and sorting through data.

As more machine learning capabilities are added to the Oracle Analytics Cloud environment, humans will be freed to focus on more uniquely cognitive capabilities, such as the interpretation of data and collaboration.

Machine learning enables humans to focus on uniquely cognitive talents

As self-service becomes an expectation rather than a differentiator, machine learning and AI capabilities will be the differentiators moving forward, and will expand the scope of analytics consumption and usership by helping less experienced individuals find and manipulate the data that is
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most relevant to them. But rather than making human roles obsolete, these features will help users focus on what they are uniquely good at: the interpretation, rather than sifting, of data.

Oracle Analytics Cloud has planned feature improvements that will further help users learn about the data sets they are working with to give human context to information, jumpstarting the process of insight. Automated data diagnostics, which will use machine learning to teach users about the data set they are working with, helps users understand value distribution and statistically correlated factors as well as which segments and clusters of data have the highest predictive significance. These features help level the playing field for users with different educational backgrounds, which is increasingly important as the consumers of data within the enterprise expand beyond traditional business analysts.

Social interaction and collaboration are key components to the Oracle Analytics Cloud environment and areas in which human skill complements, rather than competes with, automation. Oracle, as a company, has stated its interest in the social outcomes that can be driven by analytics, and human participation in the analysis process is key to this human-centric vision. Machine learning in the Oracle Analytics Cloud environment is complemented by social features where users can annotate and share content, with users' activity data symbiotically being used to further improve machine learning recommendations. In the future, users will be able to directly give feedback to the machine learning–driven recommendations, helping the model "understand" why a suggestion was helpful or not.

Machine learning allows the Oracle Analytics Cloud environment to enable users to interact with their world in a data-centric way, gathering information from images, voice, and natural language rather than just static files or connectors to databases. Support for video and sensor data is on the roadmap, and further expands the scope in which users can interact with the world around them in a data-driven way: rather than just relying on data available via existing database connectors, users can add information from data printed on paper or in images via their phone camera, dynamically generating visualizations on the go. This allows individuals to think critically about data throughout their work day, rather than just being restricted to analysis when they are logged into the desktop application. By making data easier to collect and visualize, Oracle Analytics Cloud helps users to easily apply data to more aspects of their work, in turn helping them develop a more data-driven perspective.

Appendix

Further reading

*Market Landscape : Self-Service Analytics, 2017, IT0014-003293 (June 2017)*

*Seeking Differentiation Against a Wave of Convergence in the Self-Service Analytics Market, IT0014-003241 (April 2017)*

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