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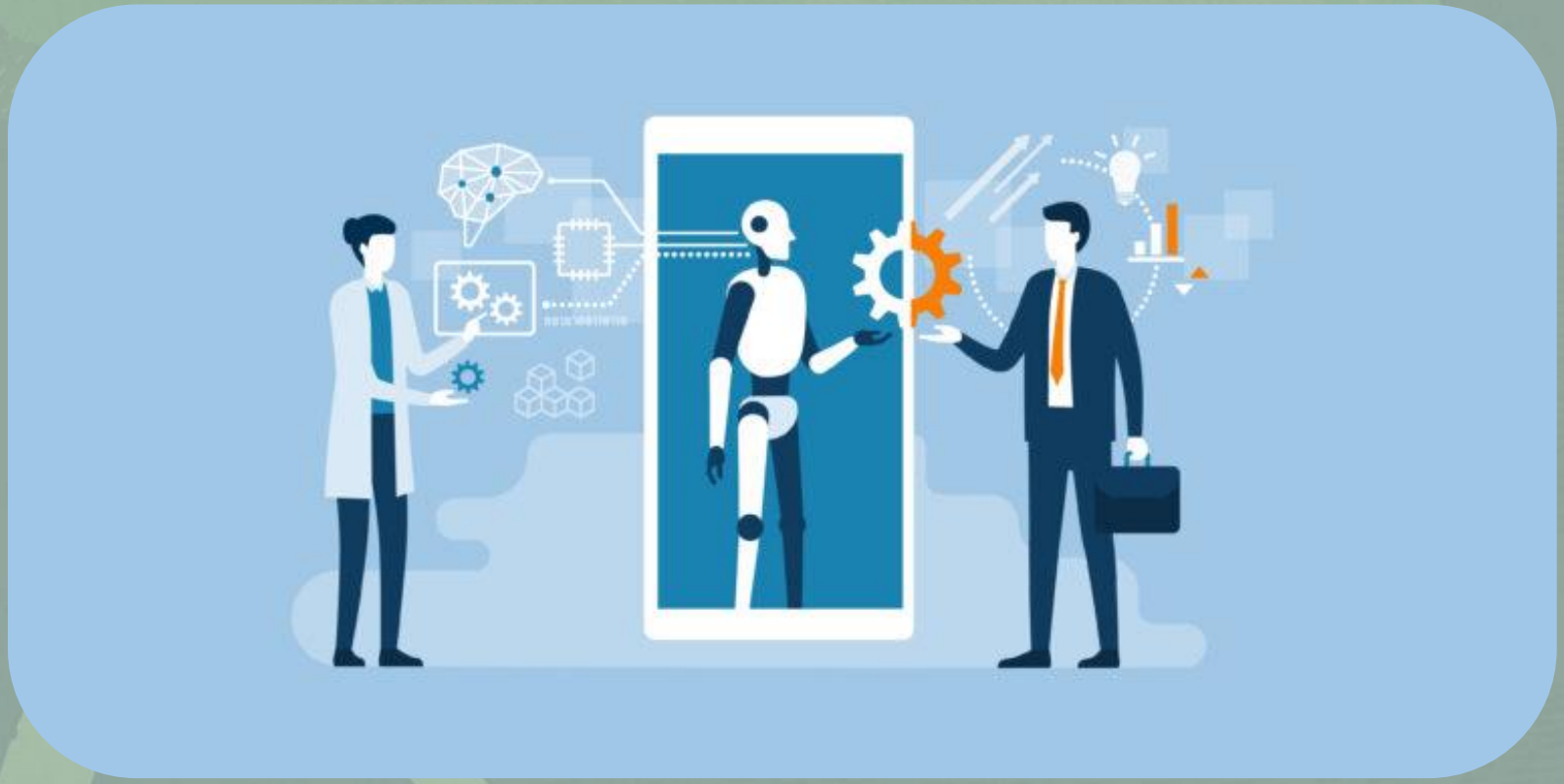
Professor Venkata Duvvuri

Dec 16th, 2022

ORACLE® Auto ML

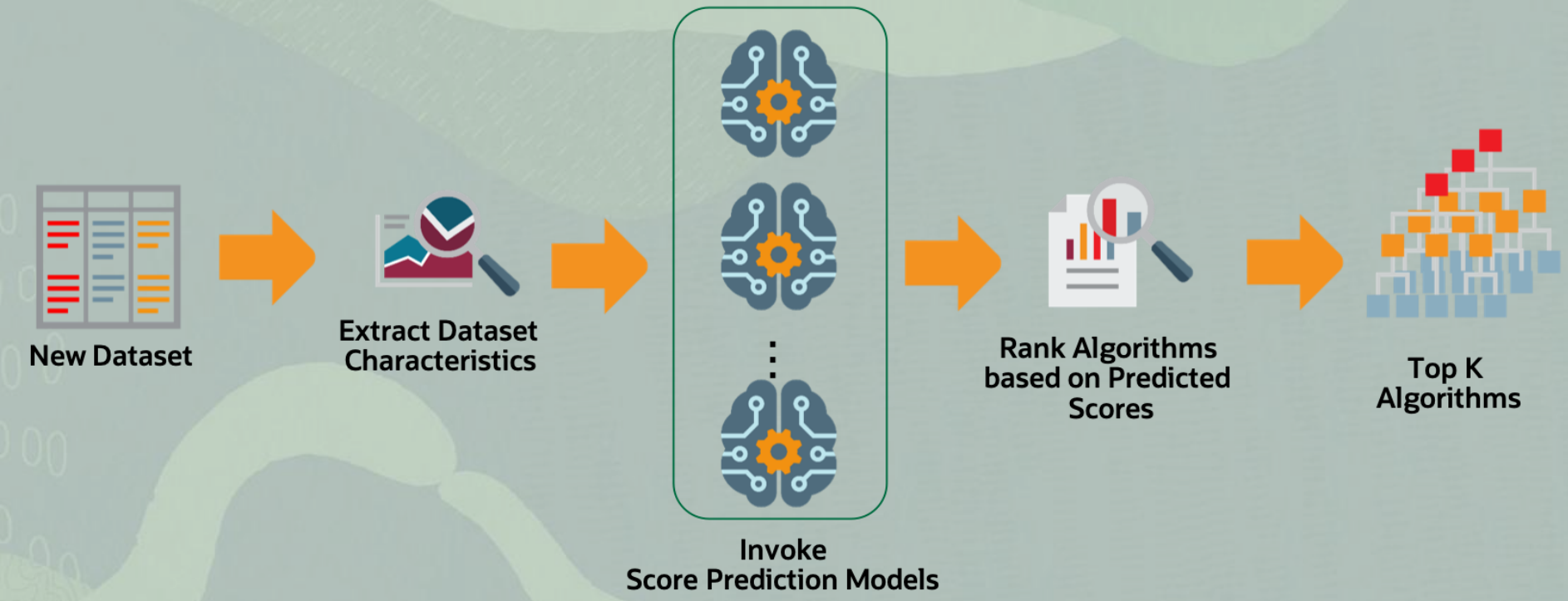
Northeastern University

What is Auto ML?



- Auto ML: the process of applying machine learning (ML) models to real-world problems
- Auto ML automates the selection, composition and parameterization of machine learning models.

ORACLE® Auto ML



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Auto ML

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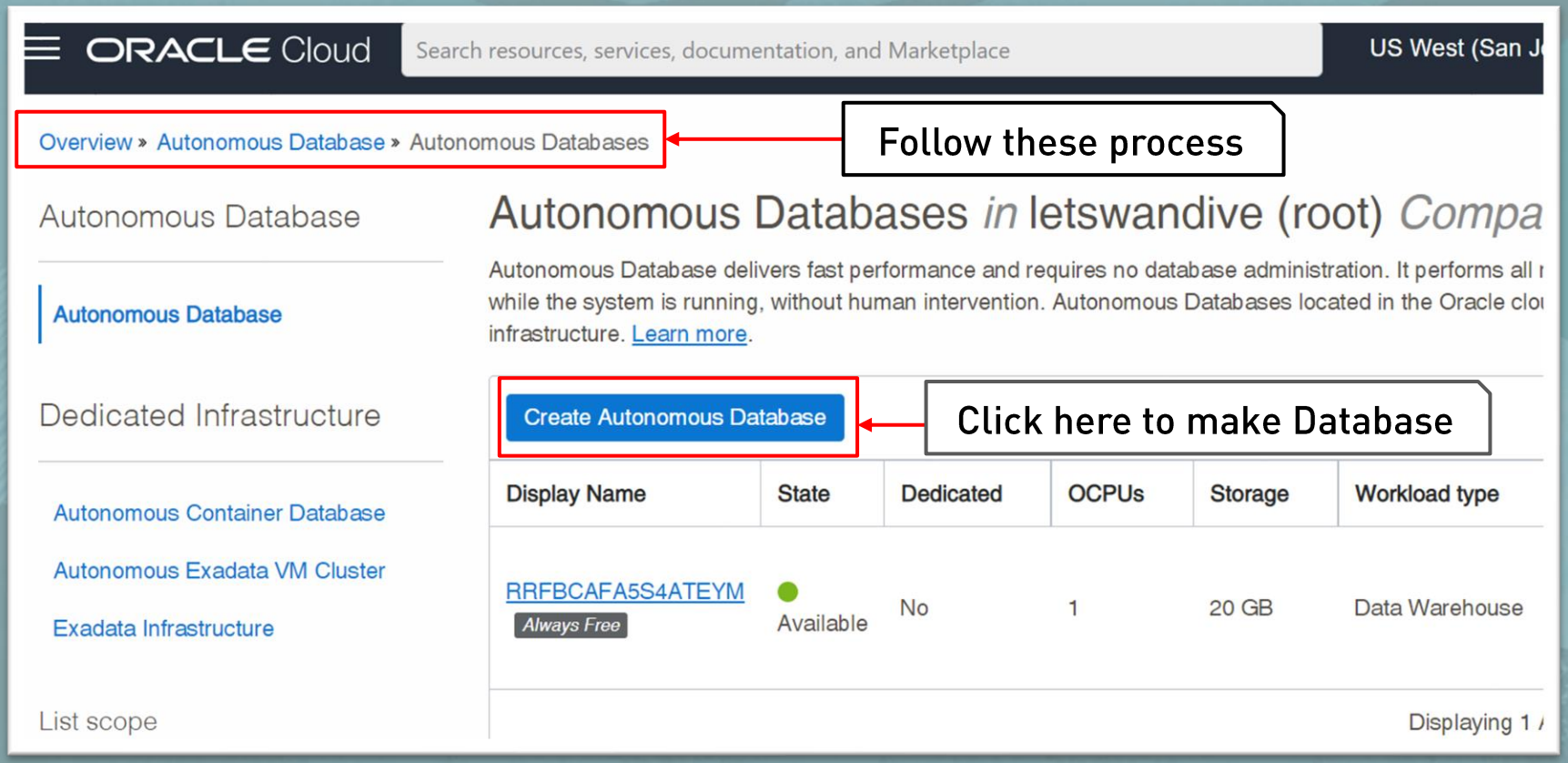
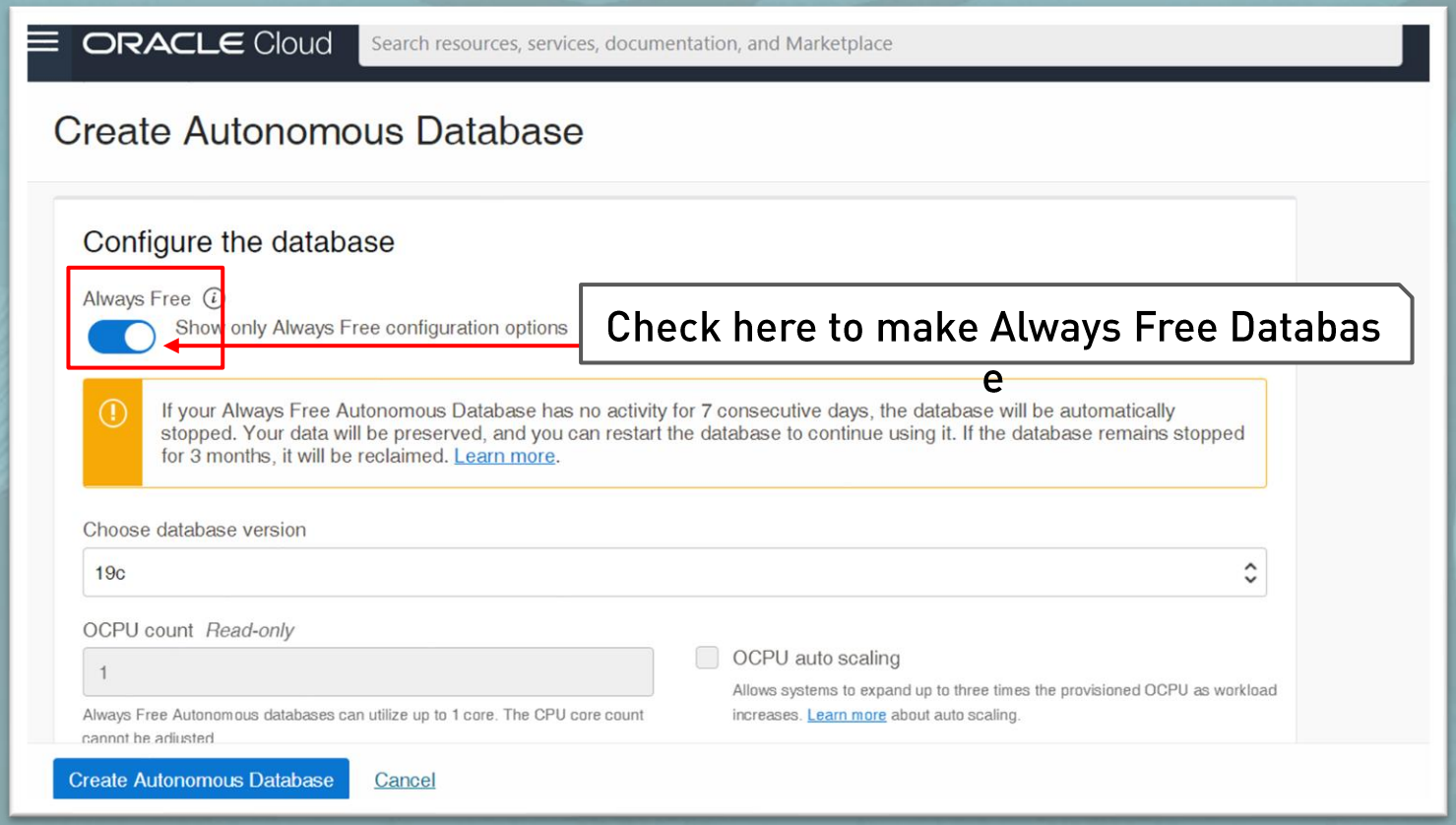
Creating Autonomous Database



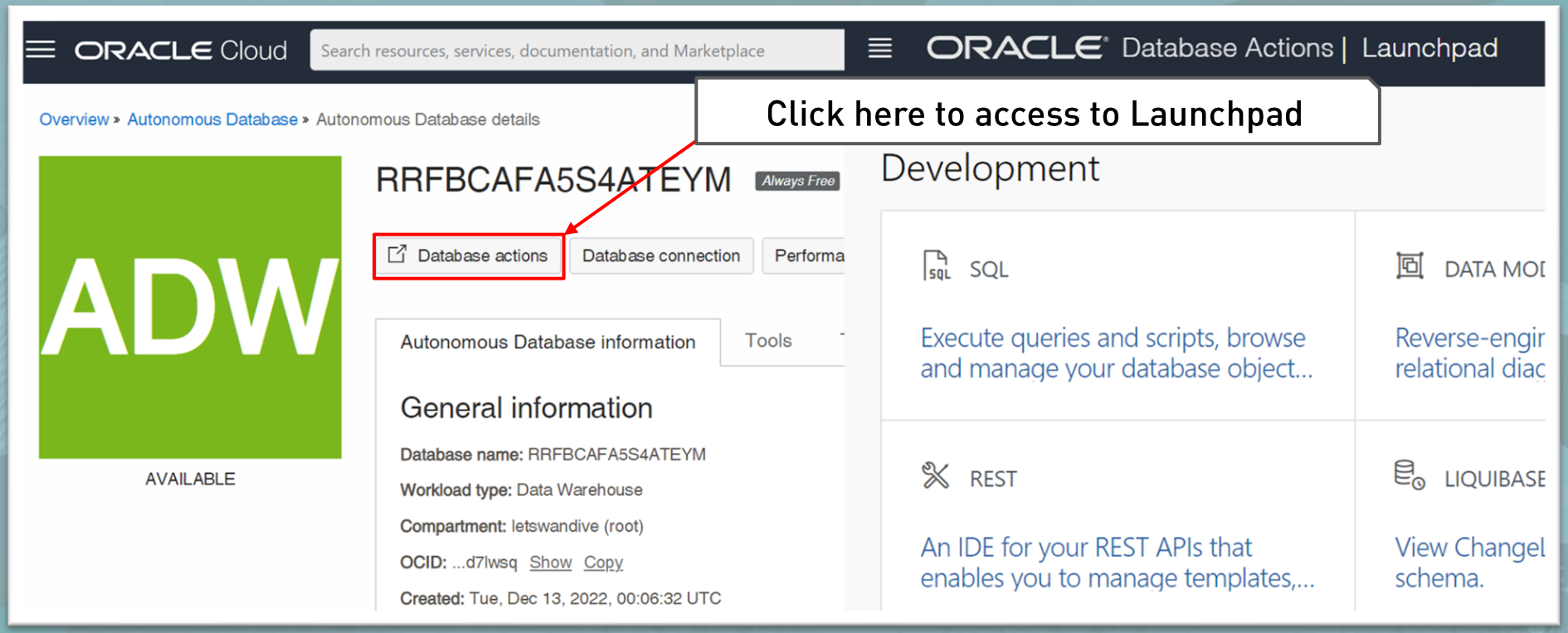
- After setting up account for Oracle cloud
- Make your Autonomous Database with 'Create Autonomous Database'

Creating Autonomous Database



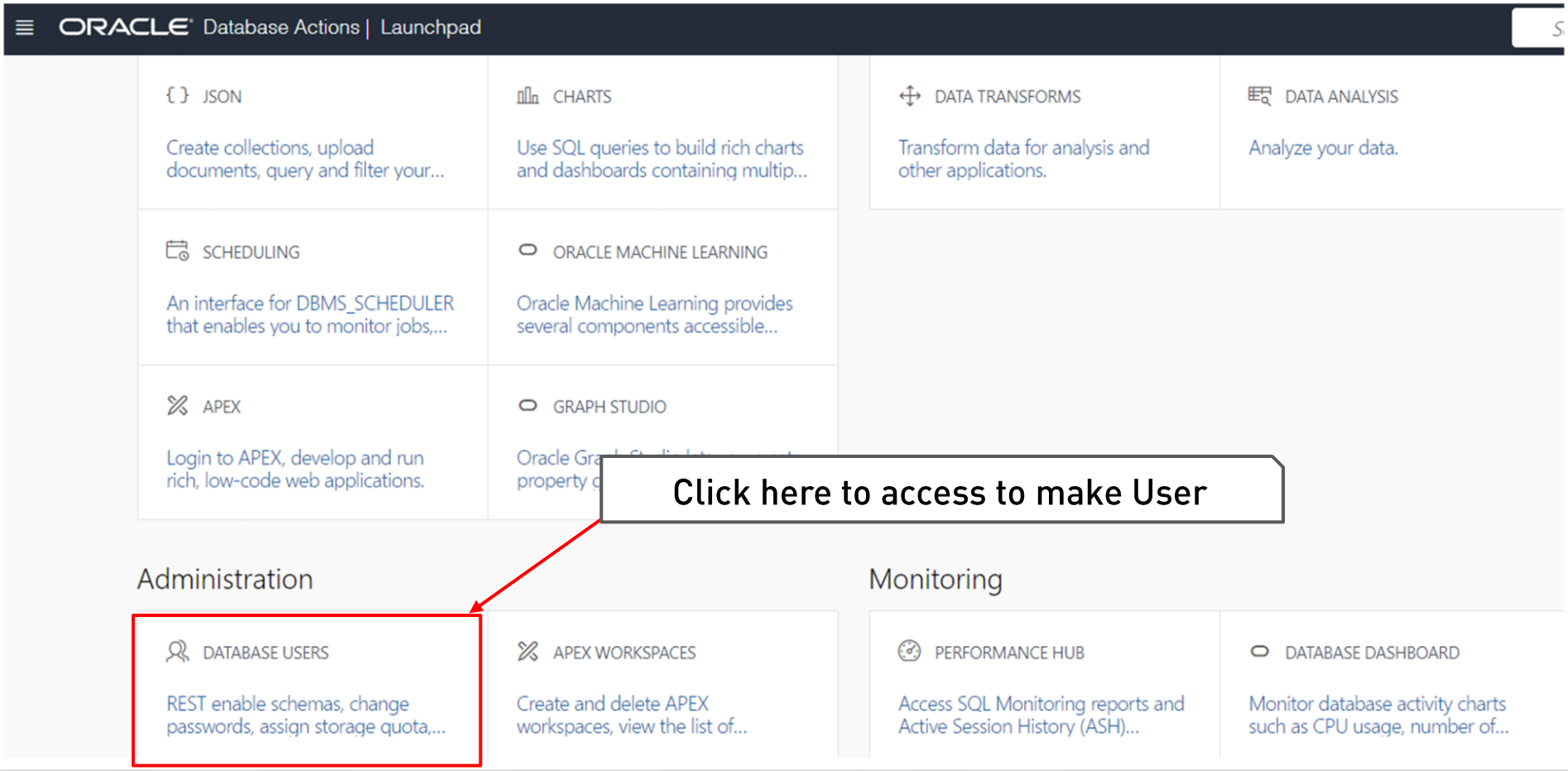
- Choose Always Free Database option
- Prevent the unexpected charges from your database.
  You can update your account with your extra permission

Access to Launchpad

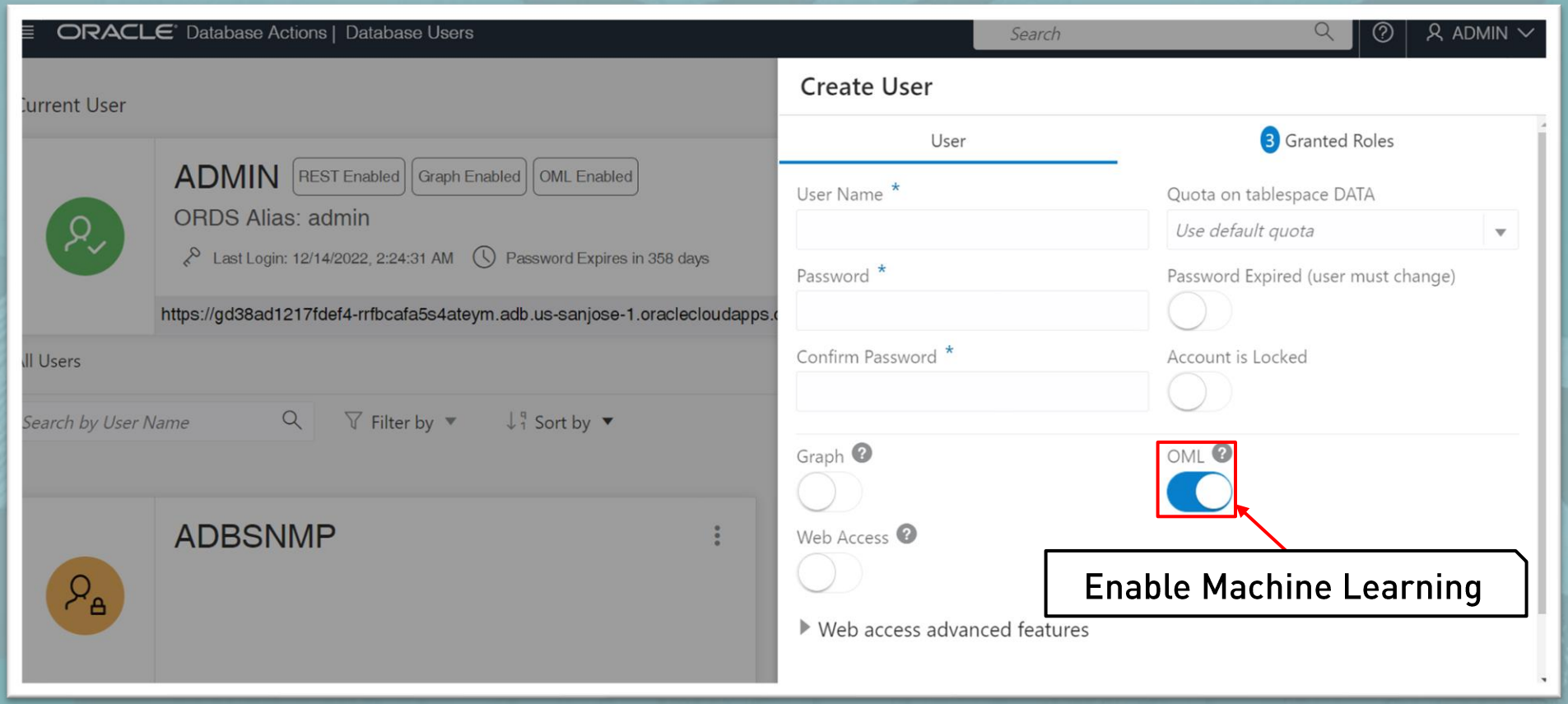


- Launchpad has almost everything you want

What's in Launchpad

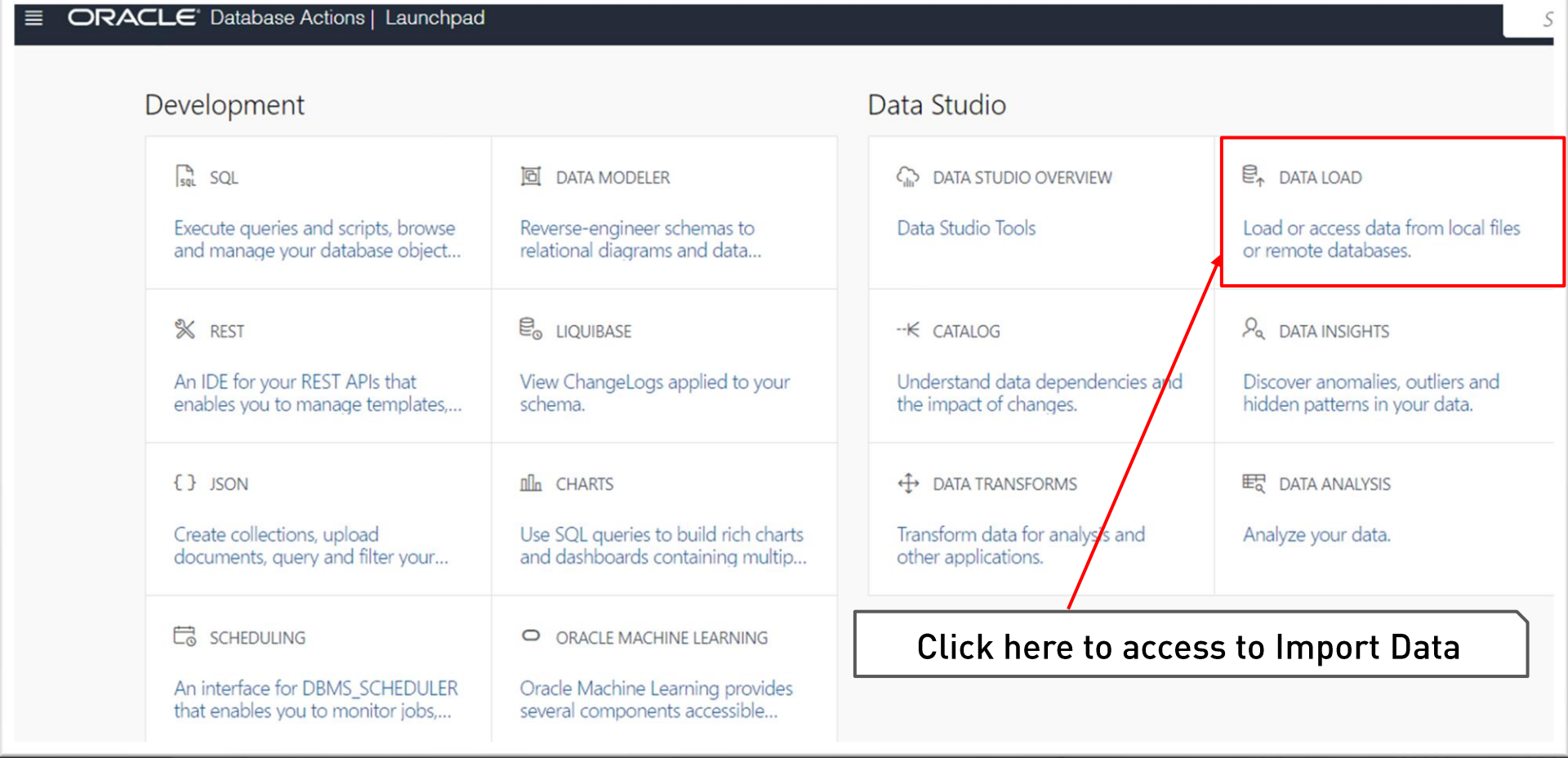


Make DATABASE User with Oracle Machine Learning Enable



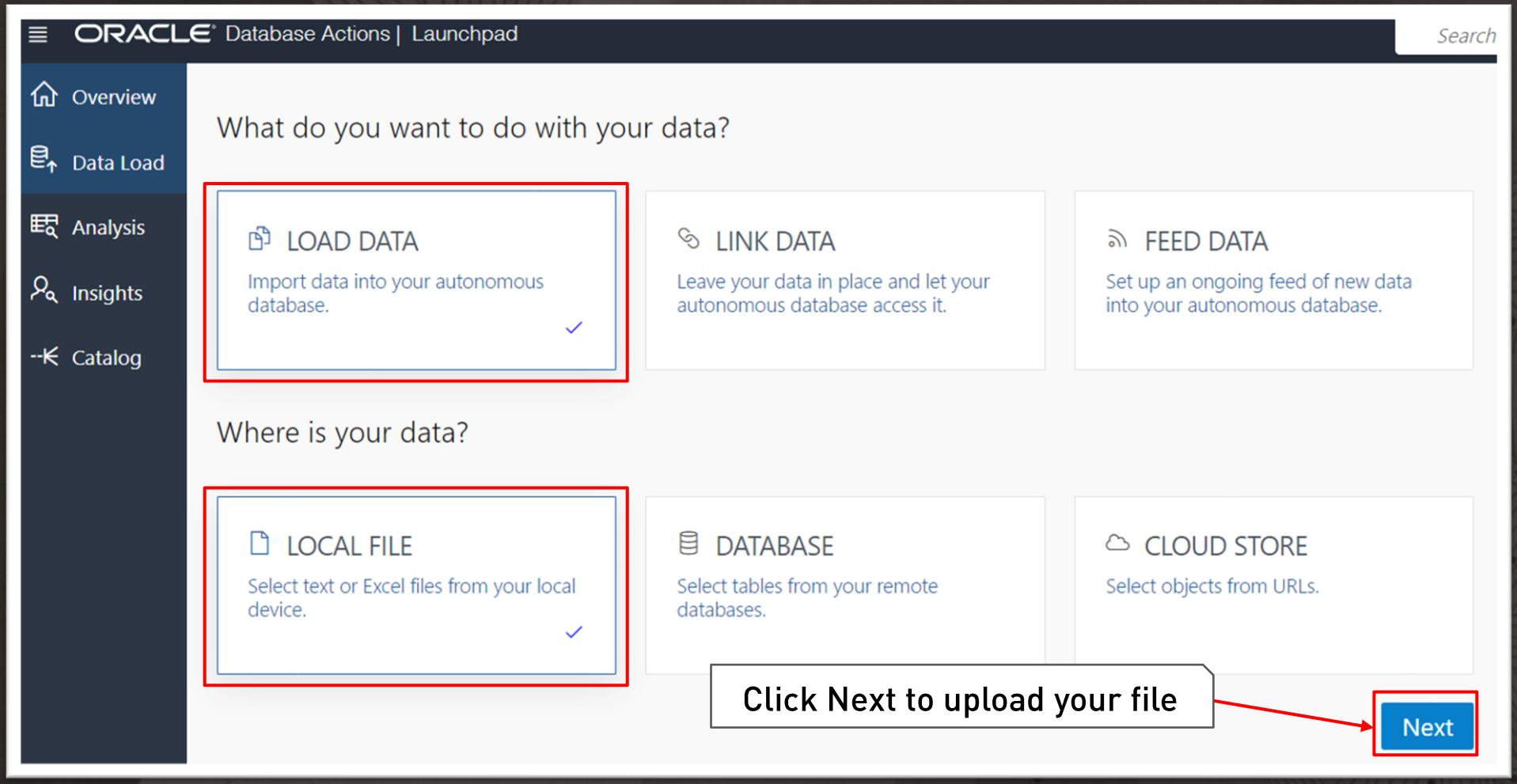
- OML: Oracle Machine Learning

What's in Launchpad

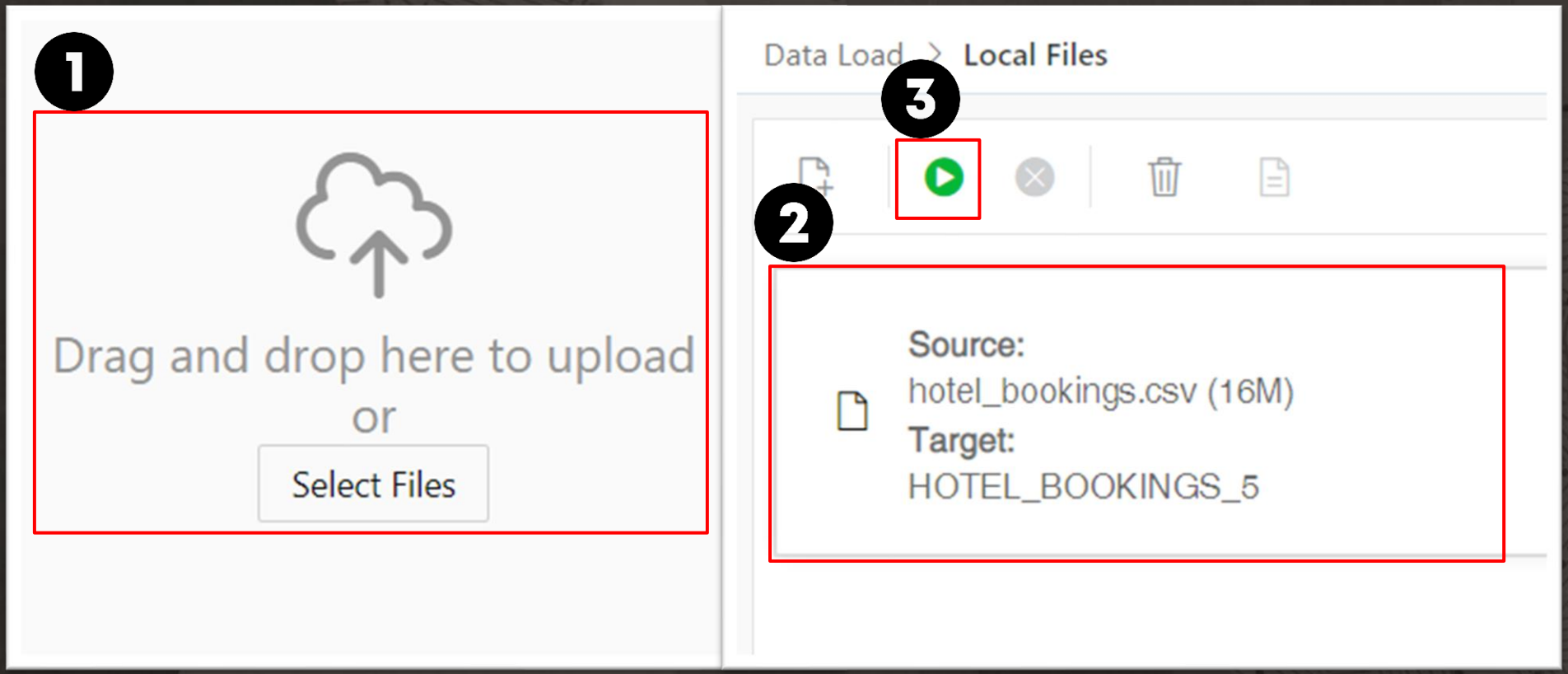


- Launchpad has almost everything you want

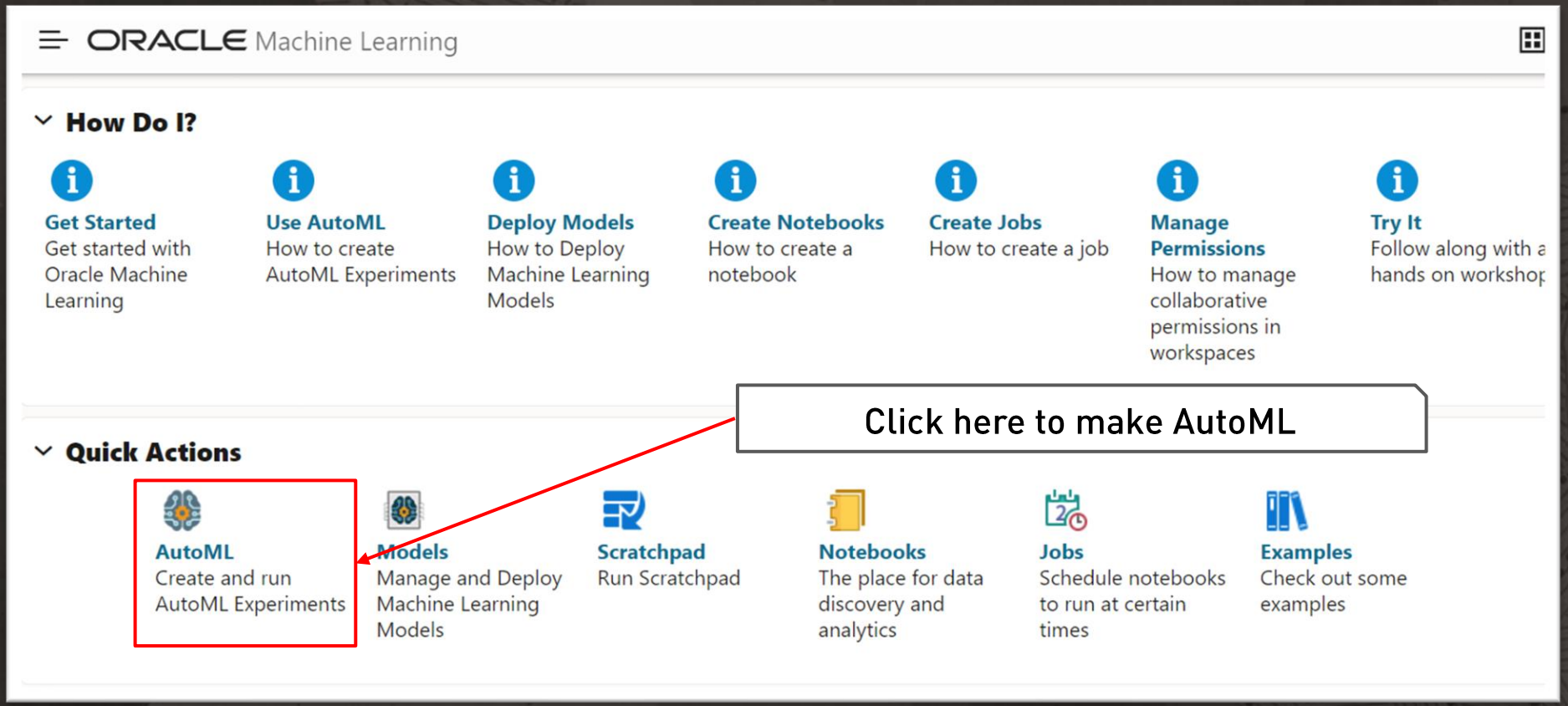
Load File in LOAD DATA



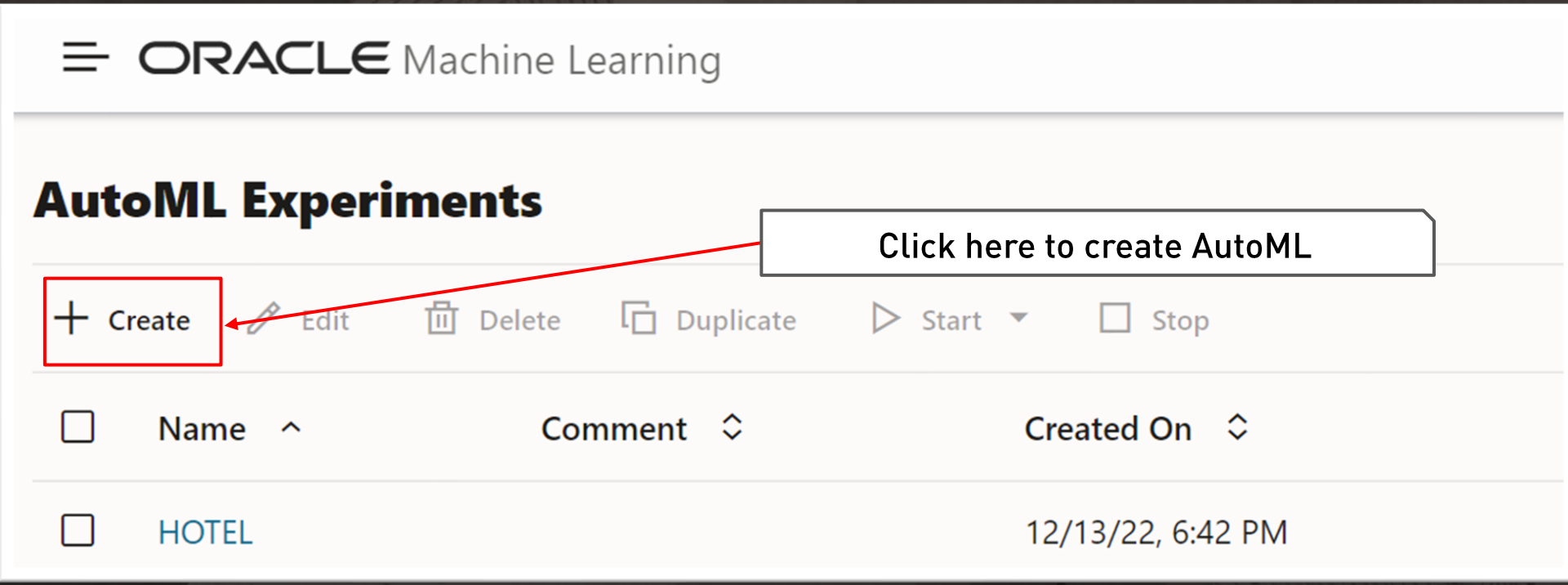
Load File in LOAD DATA



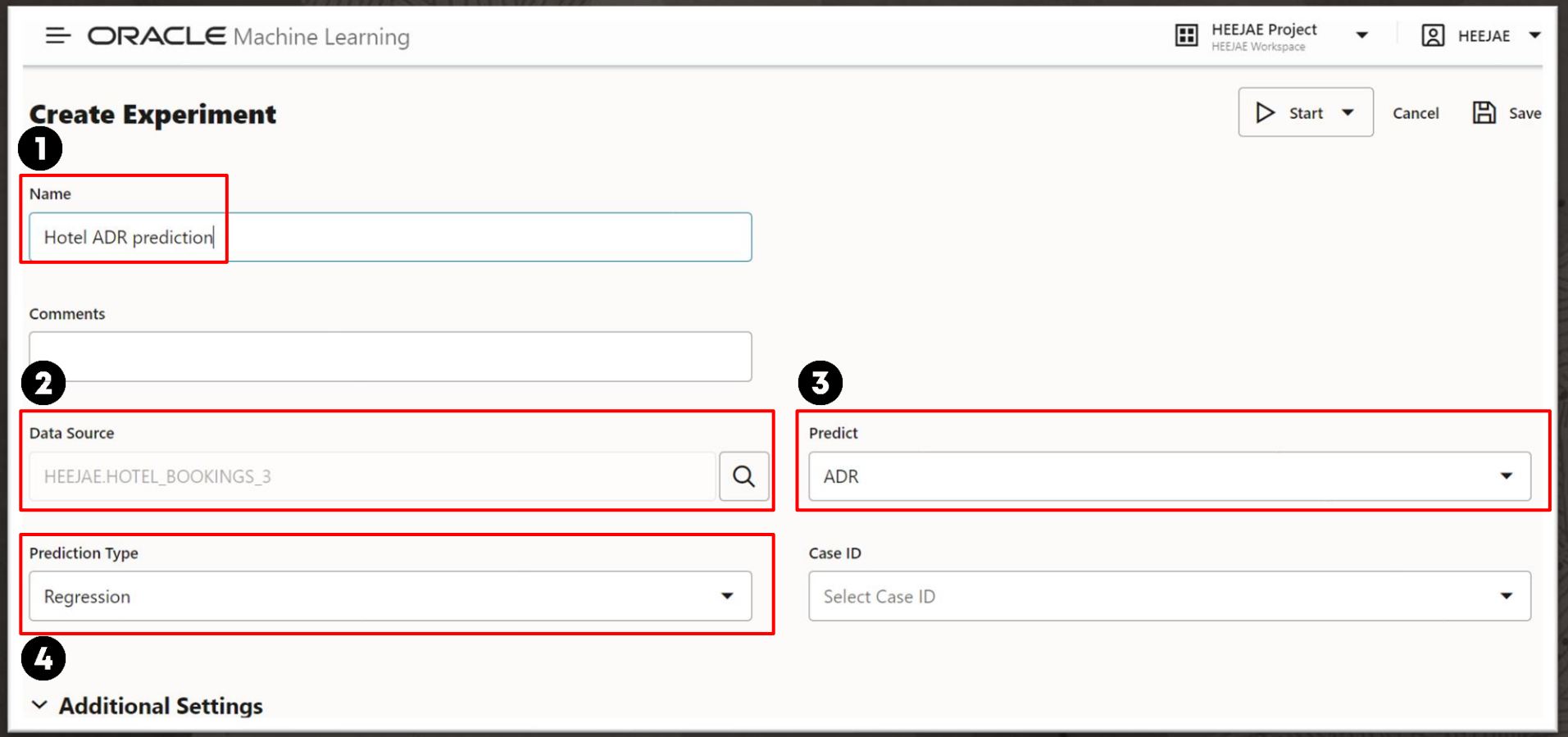
Choose Auto ML in Oracle machine Learning Dashboard



Create Auto ML

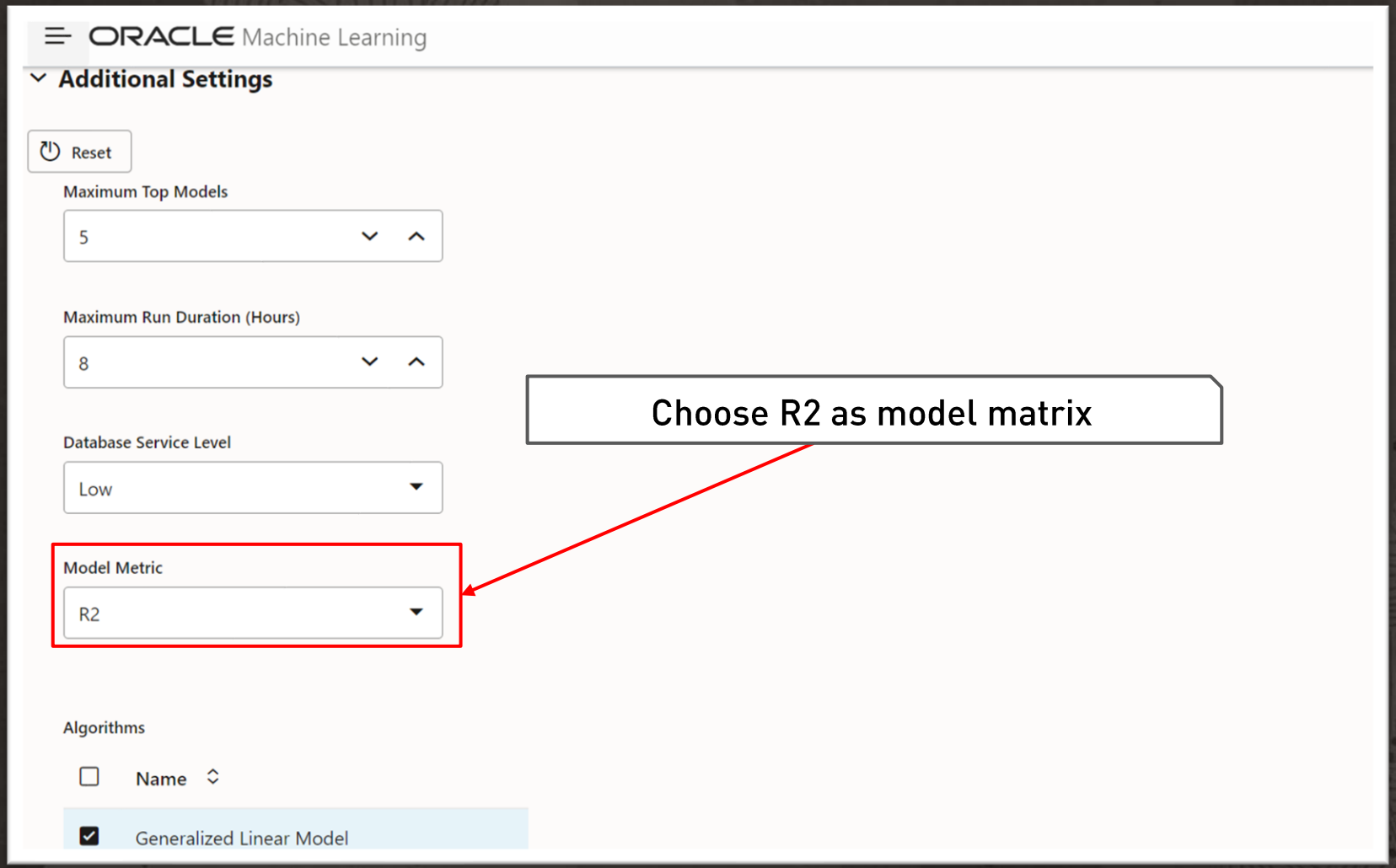


Create Experiment



1. Name it
2. Choose data sourse we imported
3. Select Target variable
4. Prediction type as Regression

Change Model metric to R2



Selecting the features for the model

Features

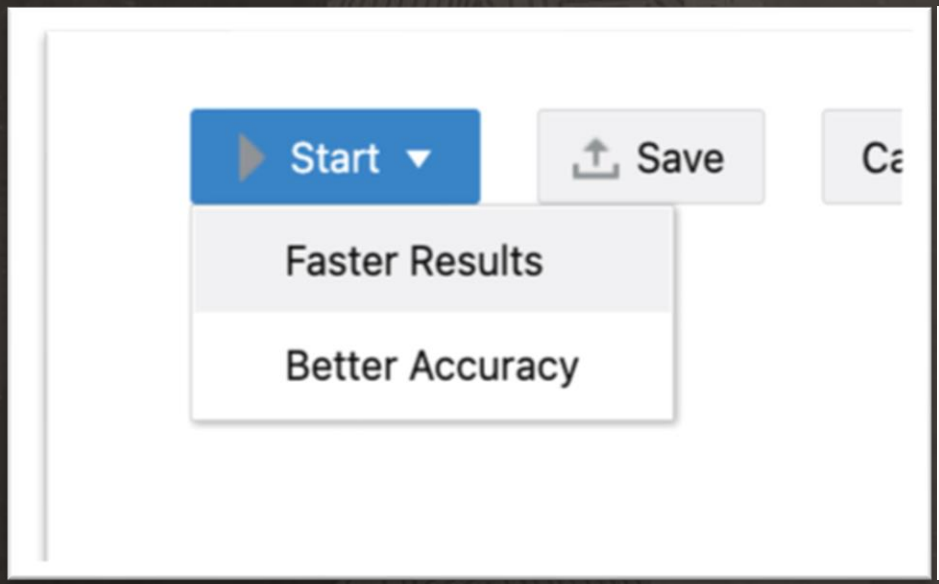
Refresh

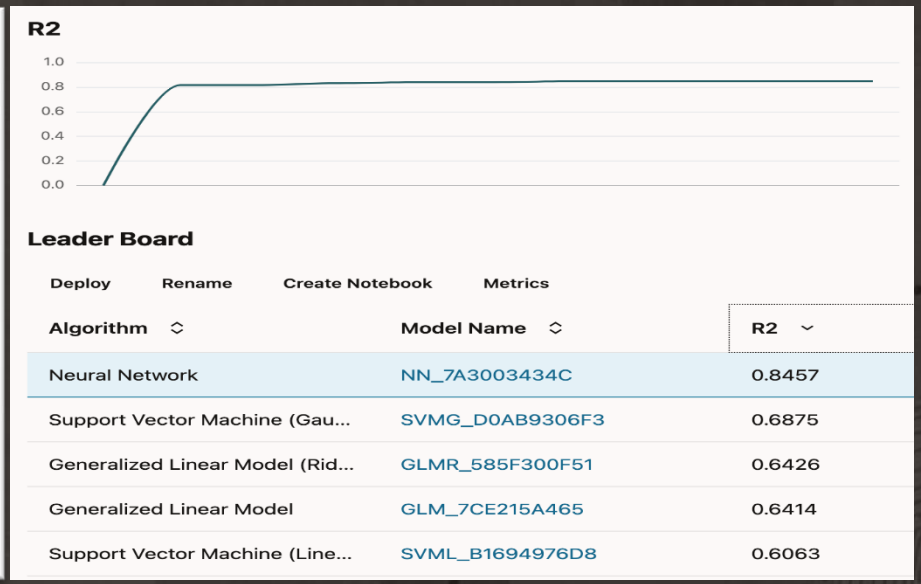
Filter

	Name	Type	Distinct Values	Min	Max	Mean	Std Dev
◎	ADR	NUMBER	9358	-6.38	5400	96.89	103.02
☑	ADULTS	NUMBER	14	0	55	1.86	0.6
☑	AGENT	VARCHAR2	333				
☑	ARRIVAL_DATE_DAY_OF_MONTH	NUMBER	31	1	31	15.8	8.93
☑	ARRIVAL_DATE_MONTH	VARCHAR2	12				
☑	ARRIVAL_DATE_WEEK_NUMBER	NUMBER	53	1	53	27.17	13.74

- The above panel shows the features available for selection as predictor variables for the models.
- The summary information for each feature is displayed.
- The checkboxes present against each feature can be used to add or remove the predictor variables.

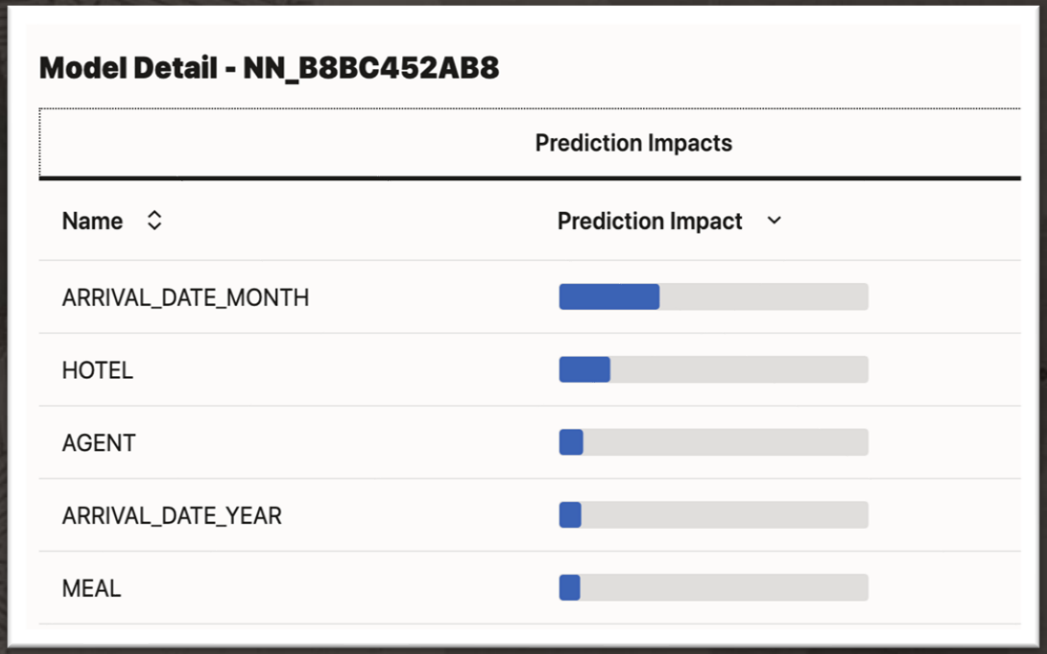
Starting the models





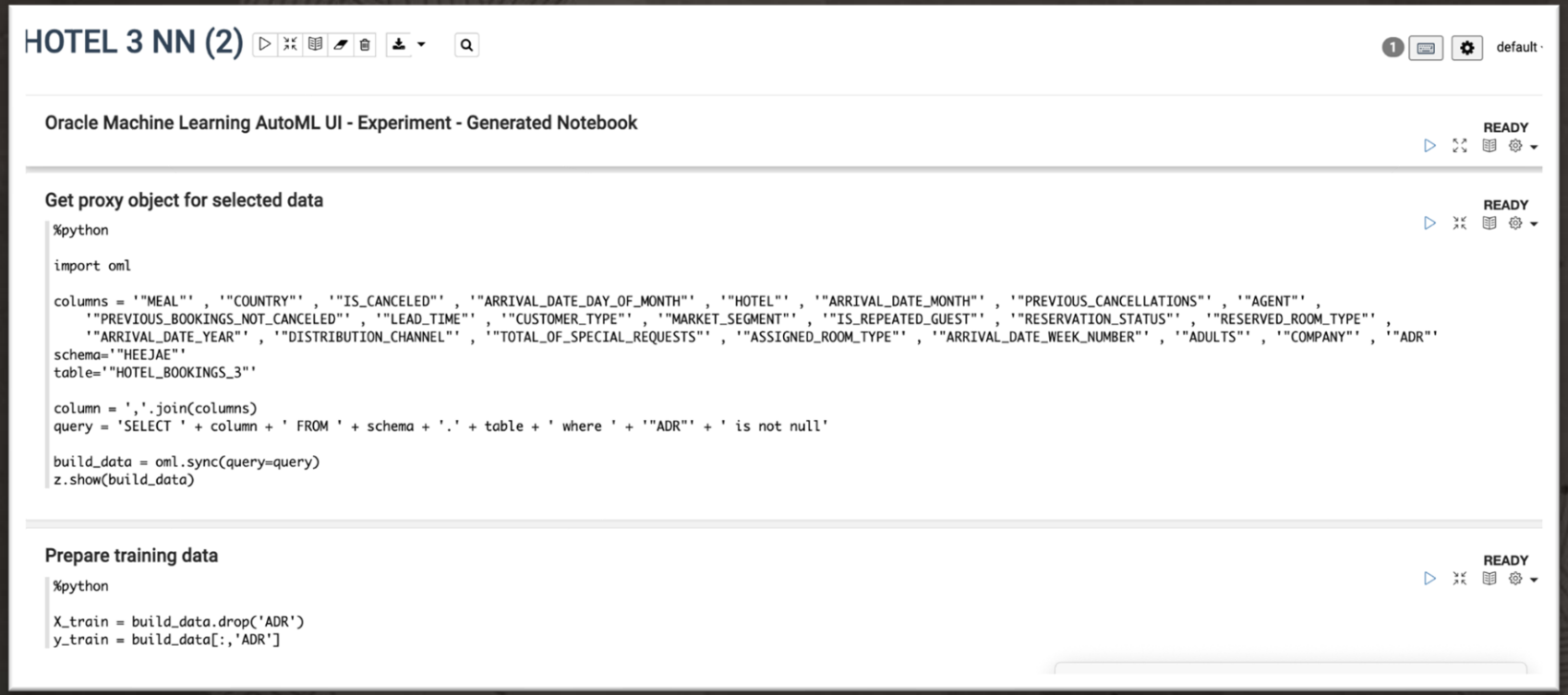
- After defining the model, in the top-right hand corner of the experiment, we can choose to start the models either with “Faster results” or “better accuracy’.
- Selecting “Faster Results” option builds the models in lesser time when compared with “Better Accuracy” option.
- As the model runs, a checklist appears in the upper right hand section with updates on its progress.
- A leaderboard is displayed which ranks the models based on the model metric selected for the experiment.

Knowing the prediction impact Of the features after the model



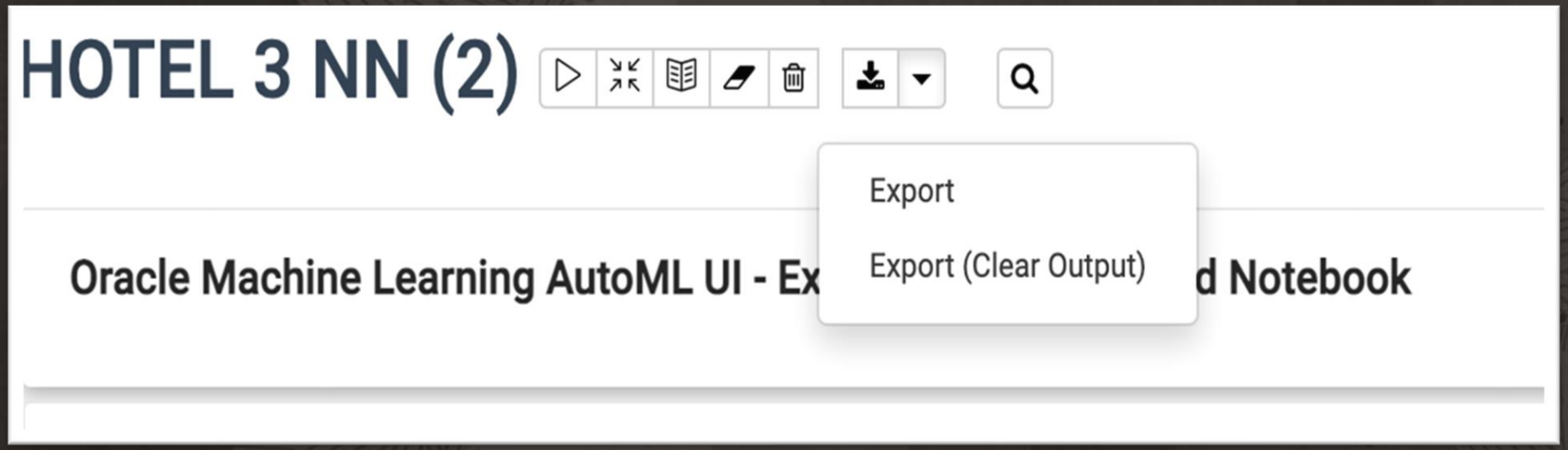
- The prediction impact of the most important features can be found by selecting a model.
- In the above image, model running with Neural Network algorithm and name NN_B8BC452AB8 is selected.

Working with Auto Model Notebooks



- Oracle notebooks can be created for a model by clicking on “Create Notebook” option in the Leaderboard section.
- They are similar to Jupyter notebooks and provides interface to run SQL queries, create visualizations, and experiment with machine learning,
- The cells can be run to clean the data, create and fit the model and rate its accuracy.

Working with Auto Model Notebooks



- The notebooks can be run directly in this page or it can be downloaded and exported by using "Export" option.

Q&A

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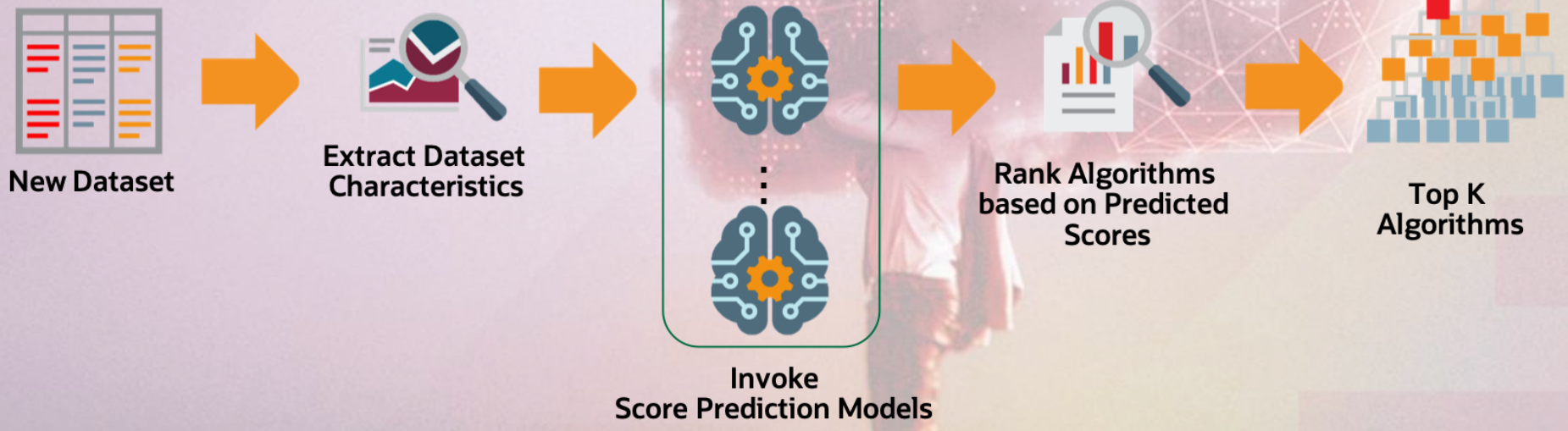
New Dataset
Extract Dataset Characteristics
Invoke Score Prediction Models
Rank Algorithms based on Predicted Scores
Top K Algorithms