

Machine learning // AutoML

AIWANNA //

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J.P.A



Background

He has been leading teams to research and develop cutting edge algorithms during 4 for years in deep learning and computer vision image processing field.

Nowadays is also developing custom made machine learning and deep learning algorithms for several industries in order add value to business cases through augmented analytics.

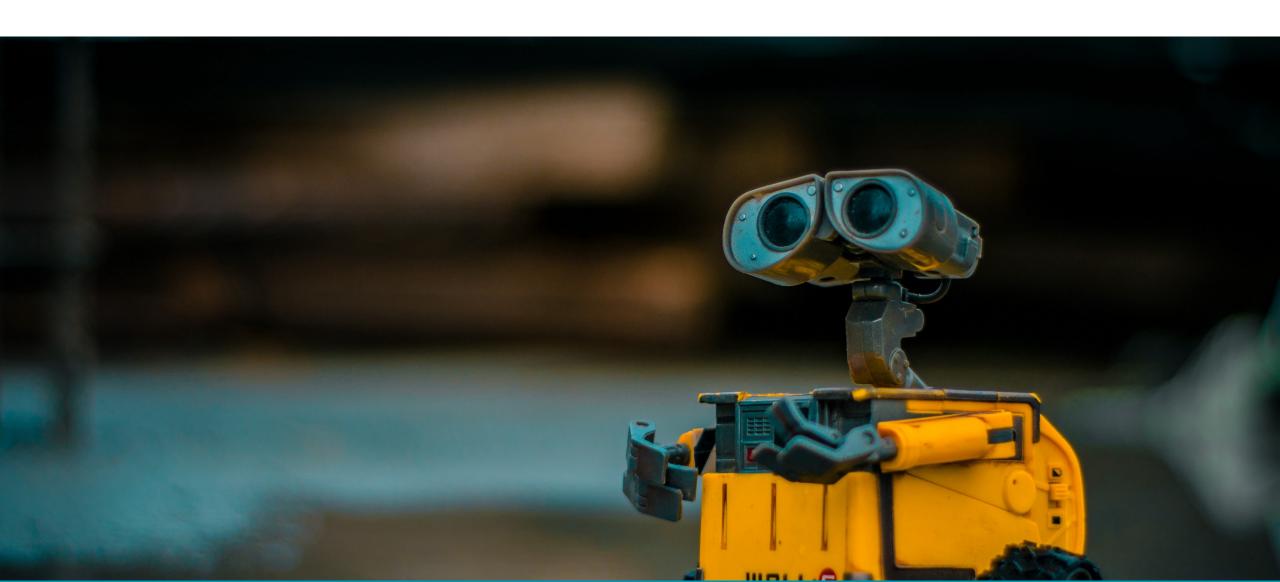
Helping startups and medium enterprises to reach their business goals with AI and running local and remote machine learning teams.

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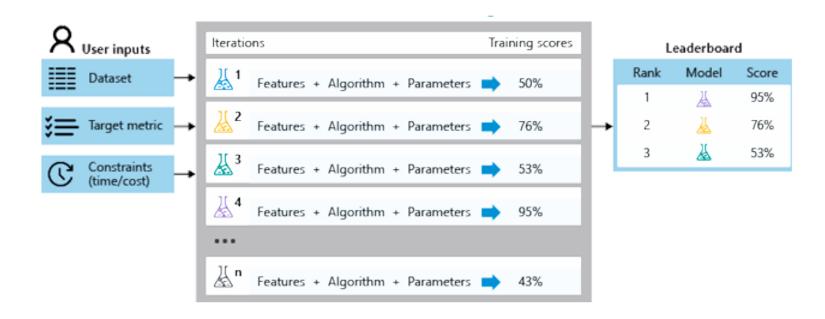
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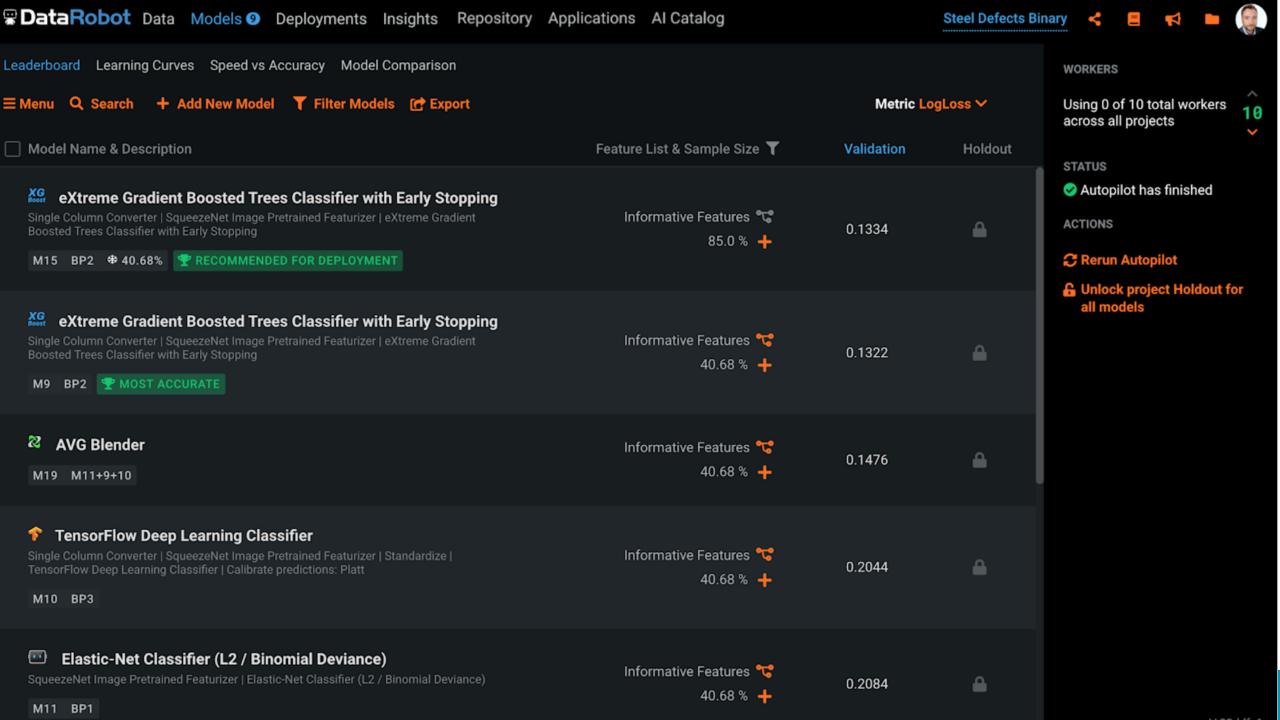


"One of the holy grails of machine learning is to automate more and more of the feature engineering process." — Pedro Domingos

"AutoML frameworks and services eliminate the need for skilled data scientists to build machine learning and deep learning models"

• It improves the efficiency by automating the most repetitive tasks. This allows the data scientists to devote more time on the problems rather than on the models.





"One of the holy grails of machine learning is to automate more and more of the feature engineering process." — Pedro Domingos

AutoML refers to automated machine learning. It explains how the end to end process of machine learning can be automated at the organizational and educational level. The machine learning model includes basically the following steps:

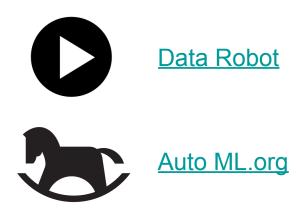
- 1 // Data reading and merging and making it ready to use.
- 2 // Data preprocessing which refers data cleaning and data wrangling.
- 3 // Optimization where the feature and model selection process is done.
- 4 // Applying it to the application to predict the accurate values.

Initially all these steps were done manually. But now with the advent of the AutoML these steps can be automated. AutoML currently falls into three categories:

a // AutoML for automated **parameter tuning** (a relatively basic type)

b // AutoML for non-deep learning, for example, AutoSKlearn. This type is mainly applied in data pre-processing, automated feature analysis, automated feature detection, automated feature selection, and **automated model selection**.

c // AutoML for deep learning/neural networks, including NAS (Neural architecture search) and ENAS (Efficient Neural architecture search) as well as Auto-Keras for frameworks.



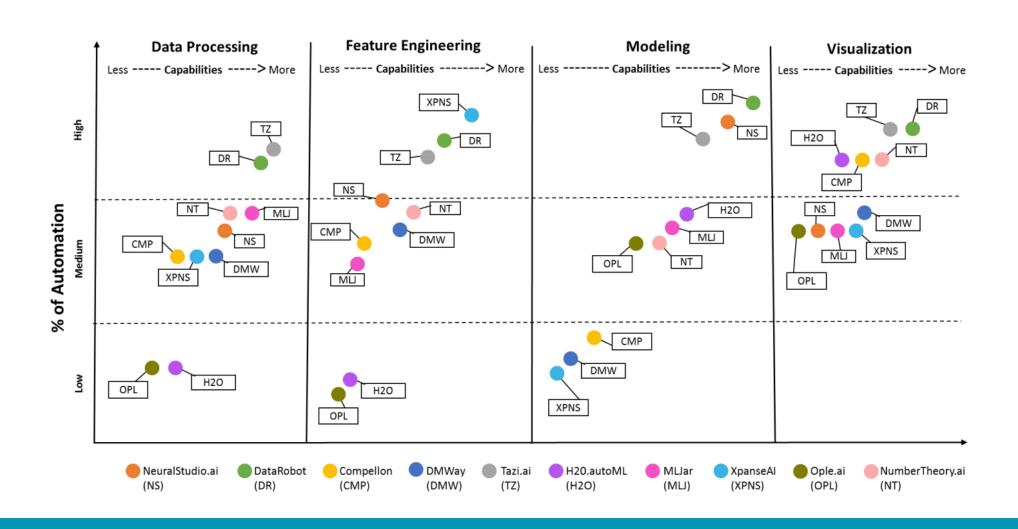
Why AutoML is raising?

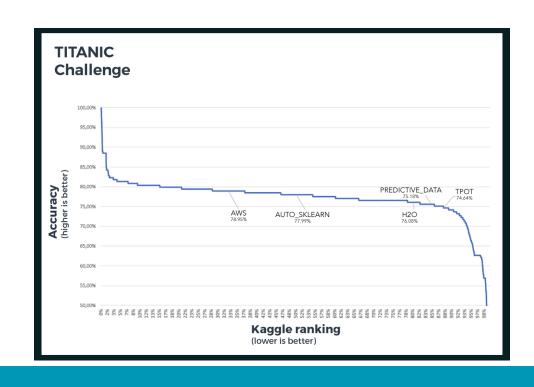
AutoML tends to automate as many steps as possible in ML pipelines and retain good model performance with **minimum manpower**.

It also provides methods and processes to:

- make machine learning more accessible
- improve efficiency of machine learning systems
- accelerate research and AI application development
- It improves the efficiency by automating the most repetitive tasks. This
 allows the data scientists to devote more time on the problems rather
 than on the models.
- Automated ML pipelines also help avoid potential errors caused by manual work.
- AutoML is a big step toward the democratization of machine learning and allows everyone to use ML features.

Company	◆ Total Funding Amount	♦ Founded Year	Number of Employees •
DataRobot	\$430.6M	2012	1001-5000
H2O.ai	\$151.1M	2012	11-50
Dataiku	\$146.8M	2013	251-500
dotData	\$43M	2018	51-100
Compellon (Acquired by Hoist Finance)	\$11.6M	2010	11-50
Coldlight Solutions (Acquired by PTC)	\$11M	2007	1-10
PurePredictive	\$10.2M	2011	11-50
Ople	\$10M	2017	11-50
Predikto (Acquired by United Technologies)	\$7.6M	2013	11-50
VEDA Data Solutions	\$7.2M	2015	1-10
Snark AI	\$1.7M	2018	1-10
MyDataModels	\$1M	2018	11-50
Tazi.ai	\$1M	2015	11-50
DMWay	\$1M	2013	1-10

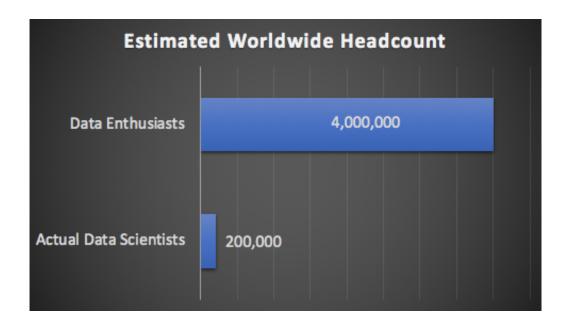






AutoML is showing tremendous advancements in making machine learning easier, and the tools are rapidly improving.

These should bring us closer to tapping into the power of 4 million **Data Enthusiasts**, as long as you can find the right balance of ease of use, budget, and customization.

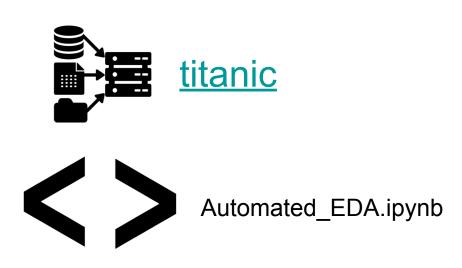


AUTO ML // Code

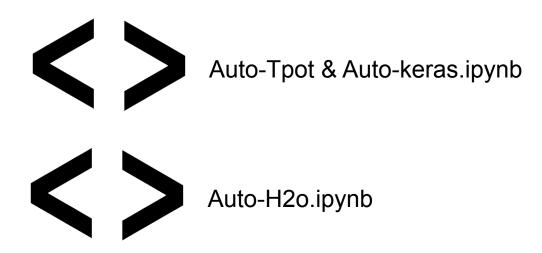
AutoML in code:

```
1 // Tpot
2 // H2o
3 //Auto Keras ( Deep Learning )
4 // Auto Sklearn ( not available yet for iOS)
```

AUTO ML // Auto-EDA



AUTO ML // Auto-ML



BATTERY



