# Auto ML Tools

* Να βάλω ημερομηνίες στα products (data robot, AutoML google etc.) Πότε βγήκαν?
* **Comparison of Auto ML providers / Demos**

**Proprietary Software**

**Data robot**

<https://www.datarobot.com/platform/getting-started-with-datarobot/>

In recent years, the machine learning community has been innovating on Python libraries that enable auto-featurization. For example, you can use the Python package **featuretools** to perform deep feature synthesis by taking advantage of the relationships between entities, and more

**Microsoft Azure Automated Machine Learning (now GA)**

<https://docs.microsoft.com/en-us/azure/machine-learning/service/concept-automated-ml>

<https://medium.com/microsoftazure/automated-machine-learning-user-interface-how-can-we-simplify-and-accelerate-ai-f82dfbf9b536>

<https://azure.microsoft.com/en-us/blog/azure-machine-learning-service-a-look-under-the-hood/?WT.mc_id=azuremedium-blog-lazzeri>

<https://azure.microsoft.com/en-us/blog/new-automated-machine-learning-capabilities-in-azure-machine-learning-service/?WT.mc_id=azuremedium-blog-lazzeri>

**How to use Azure AutoML**

<https://github.com/Azure/MachineLearningNotebooks/tree/master/how-to-use-azureml/automated-machine-learning>

**Google AutoML – Cloud AutoML**

<https://towardsdatascience.com/how-to-beat-automl-hyperparameter-optimisation-with-flair-3b2f5092d9f5>

<https://cloud.google.com/automl/>

**AutoML tables Features and Capabilities, by Google**

<https://cloud.google.com/automl-tables/docs/features#model-architectures>

AutoML Tables isn't an open source product

How AutoML tables work?

<https://ai.googleblog.com/2019/05/an-end-to-end-automl-solution-for.html>

**Amazon Web Services (AWS)**

<https://aws.amazon.com/machine-learning/>

https://aws.amazon.com/sagemaker/

**oracle**

move the algorithm not the data

"deliver machine learning embedded in the database to extract insights, more information and to make predictions - all in a more automated manner whenever possible.

supports api in r/python

Efficiency because algorithms are implemented straight on the database. Algorithms are re-implemented

**IBM Watson studio**

<https://www.ibm.com/cloud/watson-studio>

<https://researcher.watson.ibm.com/researcher/view_group.php?id=8006>

<https://researcher.watson.ibm.com/researcher/view_group.php?id=8006>

**Open Source software**

* featuretools (<https://www.featuretools.com/>)
* auto sklearn
* ML box
* TPOT - Tree-Based Pipeline Optimization Tool (TPOT) is using genetic programming to find the best performing ML pipelines, and it is built on top of scikit-learn.

**H2O Driverless AI - H20 Auto ML**

This uses a web-based UI and is specifically designed for business users who want to gain insights from data but do not want to get into the intricacies of machine learning algorithms. This tool allows users to choose one or multiple target variables in the dataset that needs a solution, and the system provides the answer. The results are in the form of interactive charts, explained with annotations in plain English.

<https://www.h2o.ai/>

<http://h2o-release.s3.amazonaws.com/h2o/rel-wolpert/9/index.html>

<https://medium.com/analytics-vidhya/gentle-introduction-to-automl-from-h2o-ai-a42b393b4ba2>

<https://towardsdatascience.com/a-deep-dive-into-h2os-automl-4b1fe51d3f3e>

**ML box**

<https://github.com/AxeldeRomblay/MLBox>

**Auto - keras**

**Auto – sklearn:** An automated project that aids scikit-learn project–package of common machine learning functions–to choose the right estimator function. The Auto-sklearn includes a generic estimator function that conducts analysis to determine the best algorithm and set of hyperparameters for a given Scikit-learn job.

**Auto – WEKA:** An inspiration from the Auto-sklearn is for machine learners using Java programming language and the Weka ML package. Auto-WEKA uses a fully automated approach to select a learning algorithm and sets its hyperparameters, unlike previous methods which used to address this in isolation.

**TPOT**

<https://automl.info/automl/>

**ML jar**

<https://mljar.com/>

**ML flow**

<https://mlflow.org/docs/latest/index.html>

**Auto ml**

<https://github.com/ClimbsRocks/auto_ml>

<https://auto-ml.readthedocs.io/en/latest/>

# Material - References - Bibliography

**Books**:

1. Automated Machine Learning, Methods, Systems, Challenges, Springer
2. Practical Automated Machine learning on Azure

**GitHub** repositories:

* Awesome Auto ML papers: <https://github.com/hibayesian/awesome-automl-papers>
* <https://github.com/dragen1860/awesome-AutoML>
* <https://github.com/Microsoft/nni>
* <https://github.com/mljar/automl_comparison>
* <https://github.com/georgianpartners/automl_benchmark>

**Papers**

**Sites:**

* <https://www.automl.org/>
* <https://automl.info/>

**Blog posts:**

**Automatic Machine Learning (AutoML) Landscape Survey**

<https://medium.com/georgian-impact-blog/automatic-machine-learning-aml-landscape-survey-f75c3ae3bbf2>

<https://medium.com/georgian-impact-blog/choosing-the-best-automl-framework-4f2a90cb1826>

**YouTube videos:**

Oracle: <https://www.youtube.com/watch?v=Jt3FYJ7wV-w>

TPOT: <https://www.youtube.com/watch?v=QrJlj0VCHys>

Data Robot: <https://www.youtube.com/watch?v=ZChA63CpX5o>

**Automated Feature synthesis**

<https://arxiv.org/pdf/1706.00327.pdf>

<https://arxiv.org/pdf/1801.05372.pdf>

<https://www.featuretools.com/>

**Go in Medium and search for “auto ml”**

1. Towards Data Science: What’s auto ML?

<https://towardsdatascience.com/whats-auto-ml-b457d2710f9d>

1. Auto is the new black — Google AutoML, Microsoft Automated ML, AutoKeras and auto-sklearn

<https://medium.com/@santiagof/auto-is-the-new-black-google-automl-microsoft-automated-ml-autokeras-and-auto-sklearn-80d1d3c3005c>

1. Auto ML –promises and reality

<https://medium.com/iotforall/automl-promises-vs-reality-850759f2564a>

1. <https://towardsdatascience.com/automl-is-overhyped-1b5511ded65f>

**Everything you need to know about AutoML and Neural Architecture Search**

<https://towardsdatascience.com/everything-you-need-to-know-about-automl-and-neural-architecture-search-8db1863682bf>

<https://becominghuman.ai/a-brief-introduction-to-automl-fa6b598d408>

<https://www.infoworld.com/article/3430788/automated-machine-learning-or-automl-explained.html>

**Papers**

<https://papers.nips.cc/paper/5872-efficient-and-robust-automated-machine-learning>

**Case studies**

* <https://towardsdatascience.com/achieving-a-top-5-position-in-an-ml-competition-with-automl-89a5a6fb8060>

**Compare the results of several AutoML models (Survey)**

<https://heartbeat.fritz.ai/automl-the-next-wave-of-machine-learning-5494baac615f>