The 2020 State of

AutoML Adoption

SE4ML
se-ml.github.io

Image by Will Menegas, Uchida Lab,
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AutoML

Automated machine learning aims to automate (parts of) the machine learning pipeline to enable a wider audience to make use of machine learning, without needing to become an expert in the field.

Key findings

Research labs and **tech companies** are ahead in AutoML adoption.

Overall, AutoML adoption is similar across continents.

Adoption among **non-profit** and **low-tech** organisations is higher in Europe than in North America.

There is significant room for increase in adoption, especially in non-tech companies and governmental organisations.

Multiple years of **experience** increases the likelihood of AutoML adoption.

About the Survey

One question on AutoML adoption:

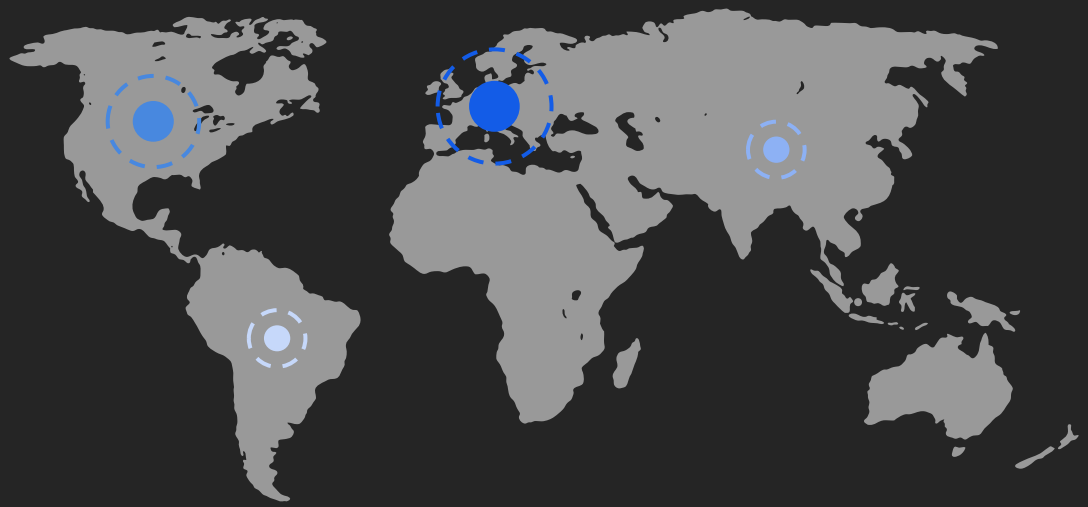
We can perform model selection and hyper-parameter optimisation in an automated way.

307 responses.		
96	31%	Not at all.
106	35%	Partially.
80	26%	Mostly.
25	8%	Completely.

Cite as: The 2020 State of AutoML Adoption by Alex Serban, Koen van der Blom, Holger Hoos, and Joost Visser.
From the same authors: The 2020 State of Engineering Practices for Machine Learning: https://se-ml.github.io/report2020
More: For more information, and to stay up to date, visit the website of the SE4ML research project: https://se-ml.github.io

Machine learning teams using AutoML around the globe

Response distribution
by region



01
Europe
56%

02
North America
24%

03
Asia and Oceania
14%

04
South America
6%

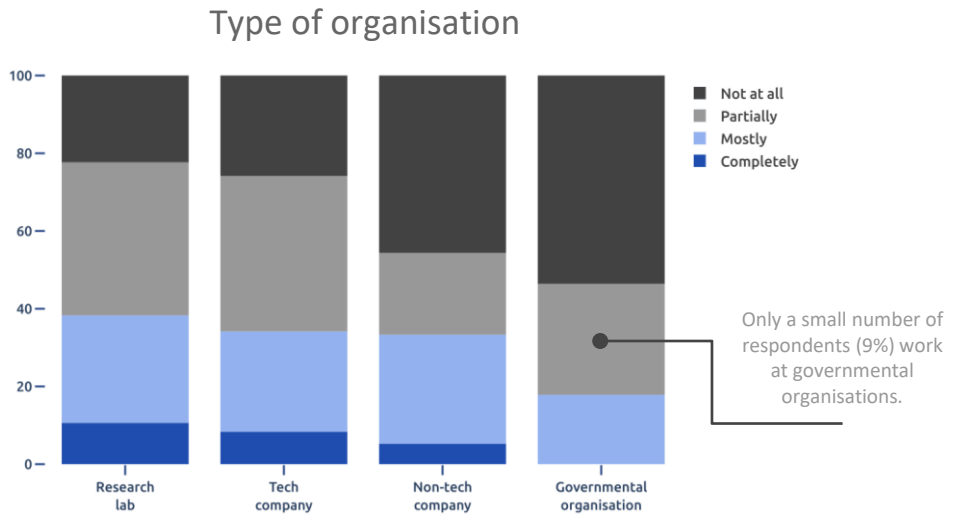
We did not receive any responses from ML teams in Africa.

Take the survey to help us improve geographical representation!

Research labs and tech companies lead in AutoML adoption

The adoption of hyperparameter optimisation by research labs is highest, closely followed by tech companies.

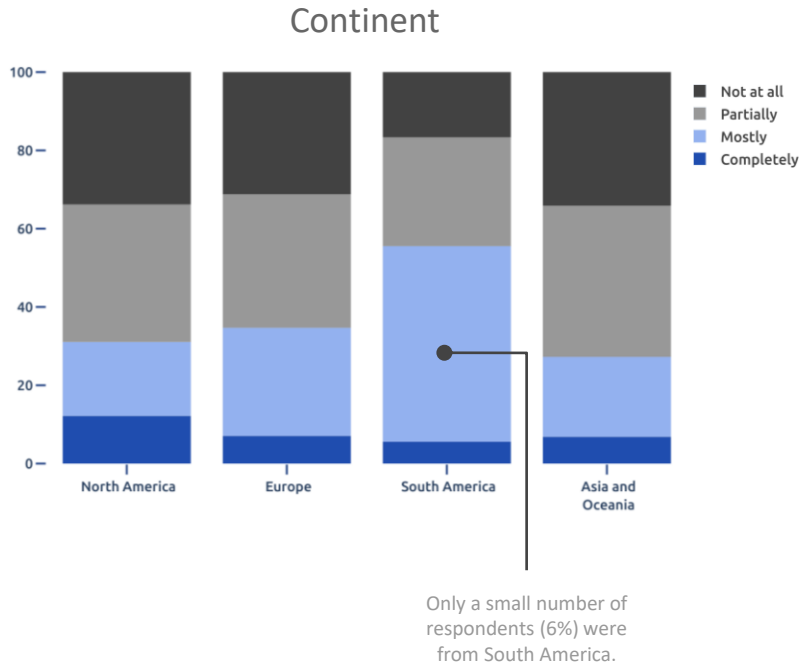
Non-tech companies and governmental organisations have substantially lower adoption.



Non-tech and governmental organisations could particularly benefit from AutoML adoption.

AutoML adoption is similar across continents

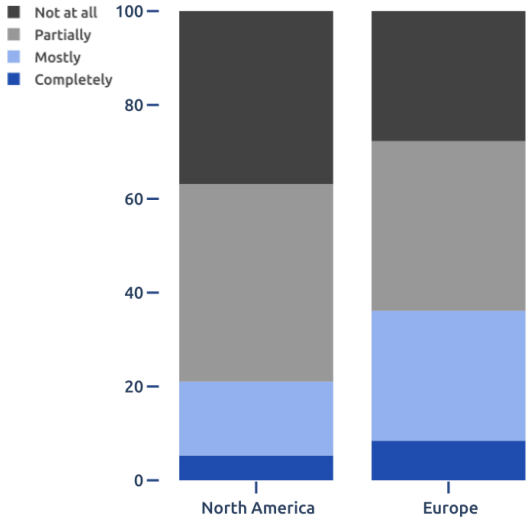
North America leads in complete adoption whereas South America leads overall (based on a small number of responses), followed by Europe.



More than 95% of the responses from Asia and Oceania were tech companies and research labs.

Adoption among non-profit and low-tech is higher in Europe

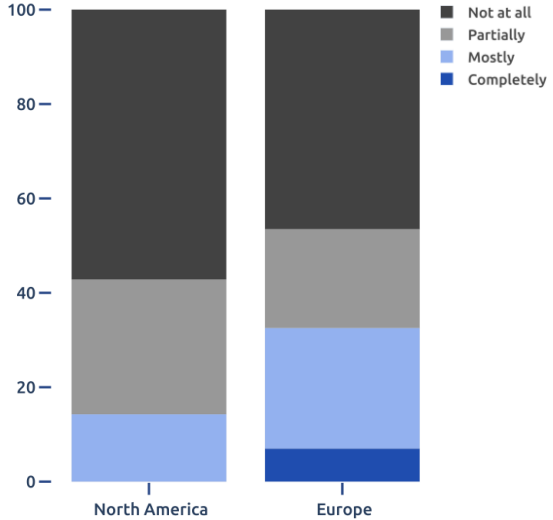
Non-profit
(research labs and government organisations)



While overall, North America and Europe are fairly even in terms of AutoML adoption, in non-profit and low-tech organisations, Europe is ahead.

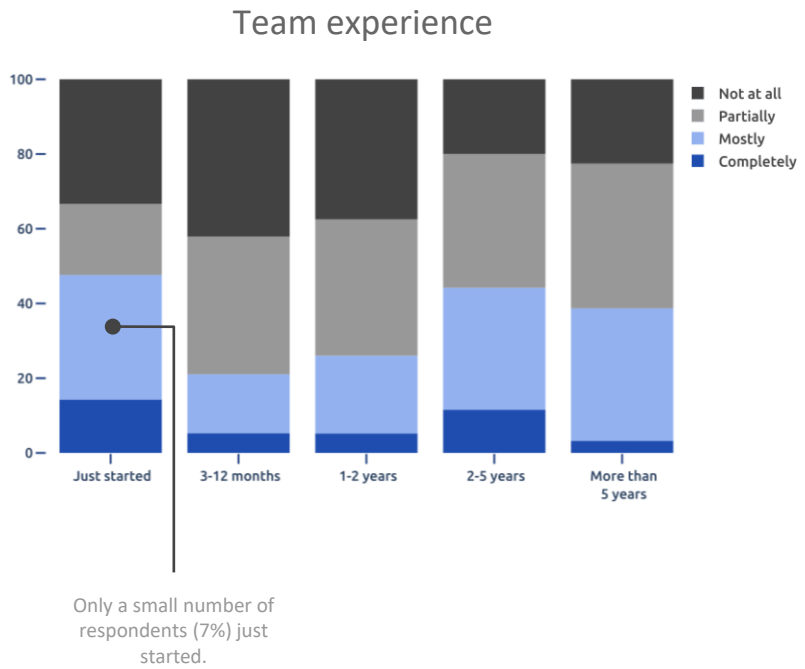
When split into these organisation categories the number of responses for South America, and Asia and Oceania were too small to say something meaningful.

Low tech
(non-tech companies and government organisations)



Adoption increases with experience

There is a substantial change in adoption after two years of experience. More than five years of experience does not seem to improve things further.



Learn more

Reading list

We reviewed scientific and popular literature to identify recommended practices. Check out this Awesome List with relevant literature.

Catalogue

The best practices that we identified are describe in more detail in this Catalogue of ML Engineering Best Practices.

Preprint

Full details of the methodology behind our survey are described in a scientific article. Read the preprint here.

se-ml.github.io

Visit our project website for more details, to take the survey yourself, and to stay up-to-date with our latest results.

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Investigating further

A new version of the survey is out to investigate other aspects of AutoML and to get more results about automated hyperparameter optimisation.

How common is the use of automated methods to generate or select features from input data?

And to which extend are automated methods for the configuration of algorithms and model structures like NAS adopted?

You can help!

Take the Survey

Please take our 10-min survey!

We will use your answers for our next report on the State of AutoML adoption.