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# Hi \*AI, do you speak Python?

— \*Focusing on Machine Learning  
& Reinforcement Learning —

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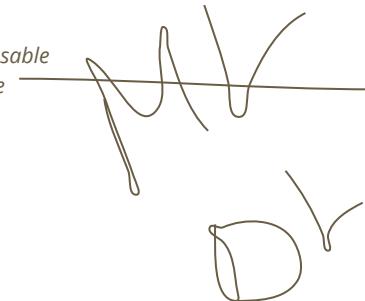
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# Before I will start

Is that a library or is that a framework?

- “Inversion of Control”\*

*\*(..) in traditional programming, the custom code that expresses the purpose of the program calls into reusable libraries to take care of generic tasks, but with **inversion of control**, it is the **framework** that calls into the custom, or task-specific, code. Wiki, Inversion of control.*



Python framework or library

- partially written in Python
- usable with Python

# Python

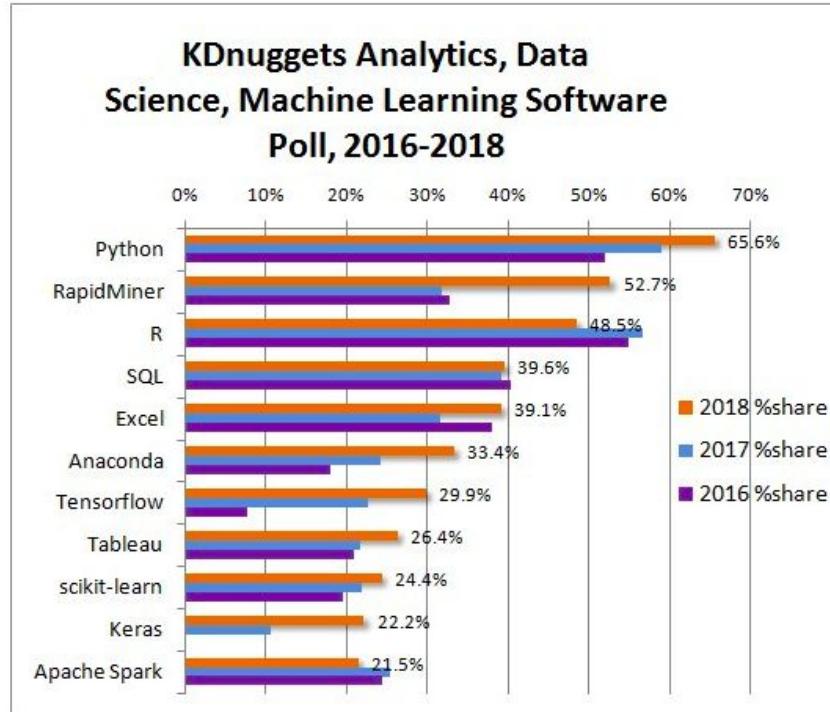


Fig 1: KDnuggets Analytics/Data Science 2018 Software Poll: top tools in 2018, and their share in the 2016-7 polls

<https://www.kdnuggets.com/2018/05/poll-tools-analytics-data-science-machine-learning-results.html>

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# Respondents

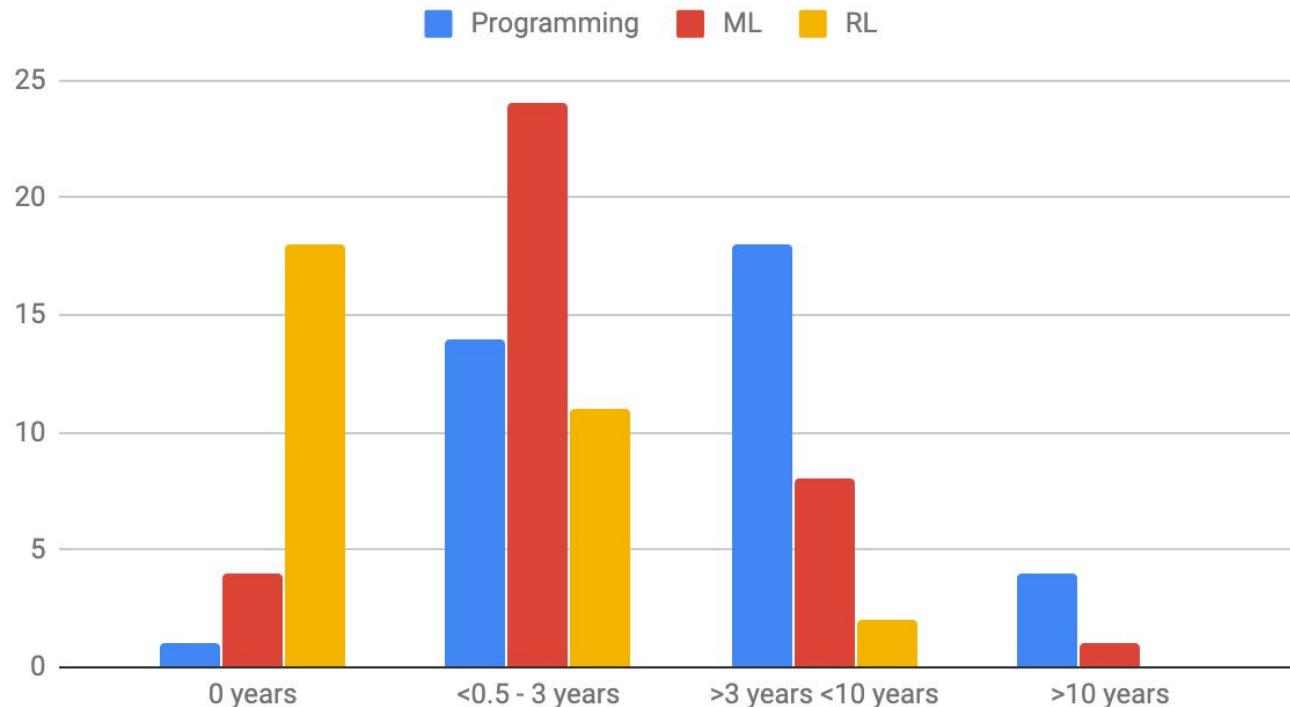
— Commercial / Research / Hobby —

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# Programming / ML / RL

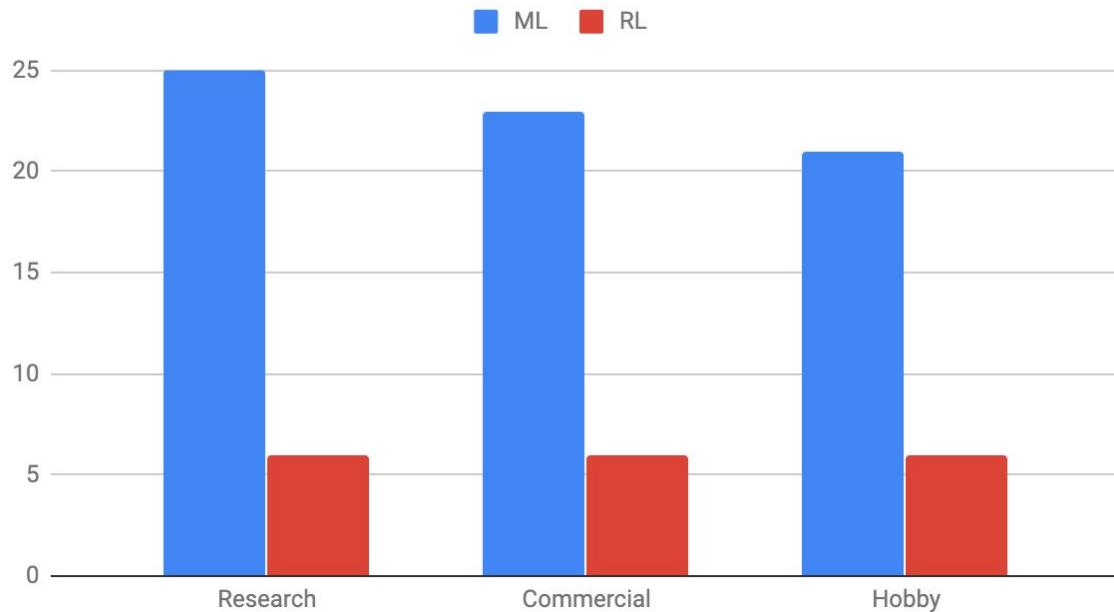
## Work Experience



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# Types of ML & RL Projects

Types of ML & RL projects



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# How do they name their job position?

## Data Scientist

Engineer, Developer,

Constructor, Solution Architect

PhD Student, Student, Researcher

Owner / CEO, Manager

Analyst

Stock broker

AI Expert

IT Professional

Product Owner

# What do they do? - ML

Looking for pre-diagnostic predictors of dyslexia in children using ML

Spot Nuclei. Speed Cures. (Kaggle)

Music Generation

Bird species recognition by sound recordings

Automating analysis of football videos

One-Shot Detection in Product-Shelves

Next word prediction

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# What do they do? - RL

Lead optimization in drug discovery process

Stock prices anomaly detection and prediction

Fraud detection

Optimization of logistics in oil manufacturing

Market simulation and time series prediction in Finance/client in Banking

Automatic frame skipping in 3d env

Heat Control

Building agent to play pong

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# What do they like?

— Respondents\*

”Python is the best language ever”

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# What do they like? - ML

Keras	PyTorch	scikit-learn	Pandas	TensorFlow
<p><u>Easy &amp; fast</u> (prototyping development)</p> <p>good for beginners</p> <p>the code is clear and easy to understand works.</p>	<p>It's pythonic</p> <p>Simple</p> <p>Many examples</p> <p>Flexibility</p> <p>Ease to debug</p> <p>Rich ecosystem of supporting tools/libraries</p>	<p>It's in Python and it's easy to use</p> <p>versatile</p> <p>great for experimentation, friendly</p> <p><u>Easy and quick</u></p> <p>Reliability</p>	<p><u>Easy to use</u> and reasonably fast</p>	<p>Well maintained</p> <p>Fast</p> <p>Good api</p>

# What do they like? - RL

TensorFlow	Keras	scikit-learn	OpenAI gym	Rdkit
User friendly Force of habit	It's easy to define model	No bullshit there	Lack of other alternatives	Easy use with chemical structure



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# PyTorch, Keras, TensorFlow

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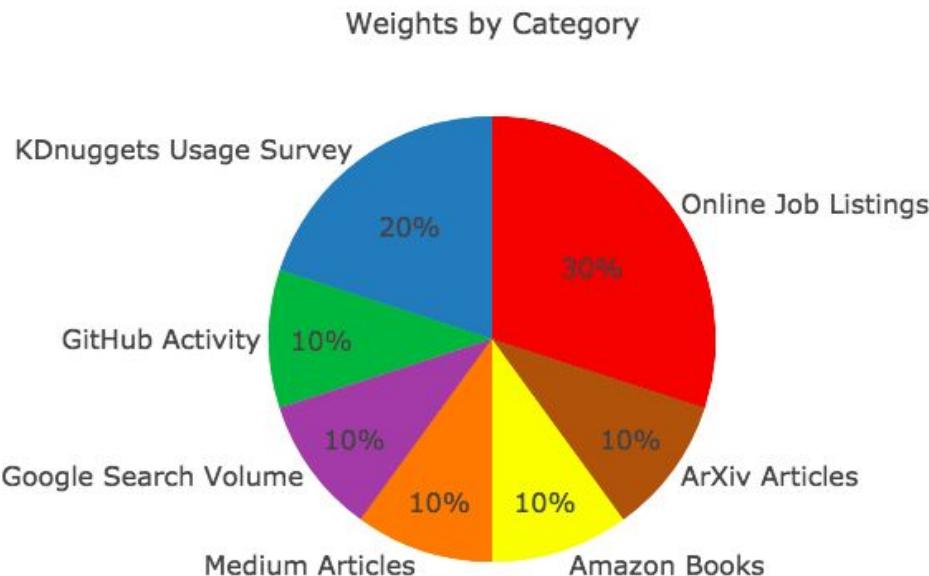
Deep Learning

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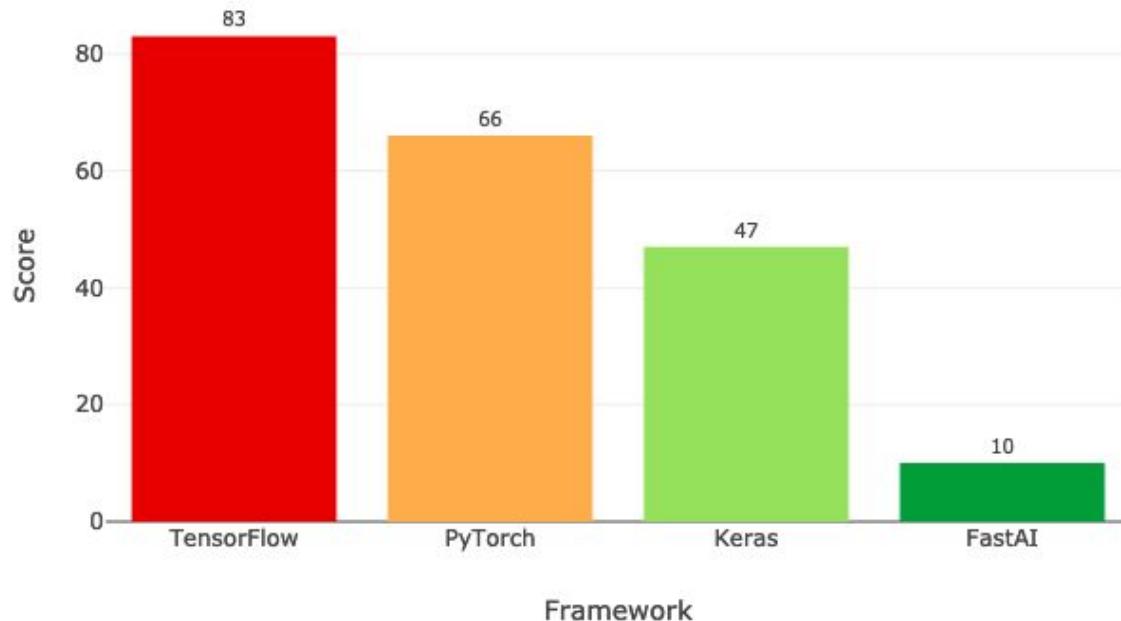
3. Weighted categories according to the weights below.

# Jeff Hale



### Deep Learning Framework Six-Month Growth Scores 2019

Jeff Hale



<https://towardsdatascience.com/which-deep-learning-framework-is-growing-fastest-3177f14aa318>

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# Main libraries - neural networks / deep learning

**TensorFlow:** very popular; not the perfect choice (alone) for beginners; massive; community support (Google)

**PyTorch:** mathematical approach; flexible; easy to find a bug; community support (Facebook)

**Keras:** support to TensorFlow; easy for beginners; not many bugs, but hard to debug ; community support (Google)

# Support

scikit-learn

pandas

xgboost

H2O

OpenAI gym

Caffe  
Theano

# How to choose a library/framework?

Based on what you know (preferable Python)

Community support

Fast

Easy

Reliable

Good for a particular task

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# AWS/Google/Microsoft

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— AI-as-a-Service... ? —

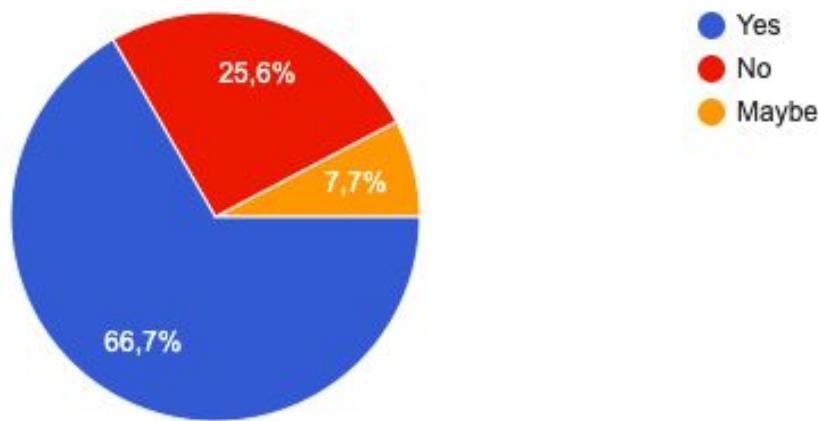
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# Confusing...

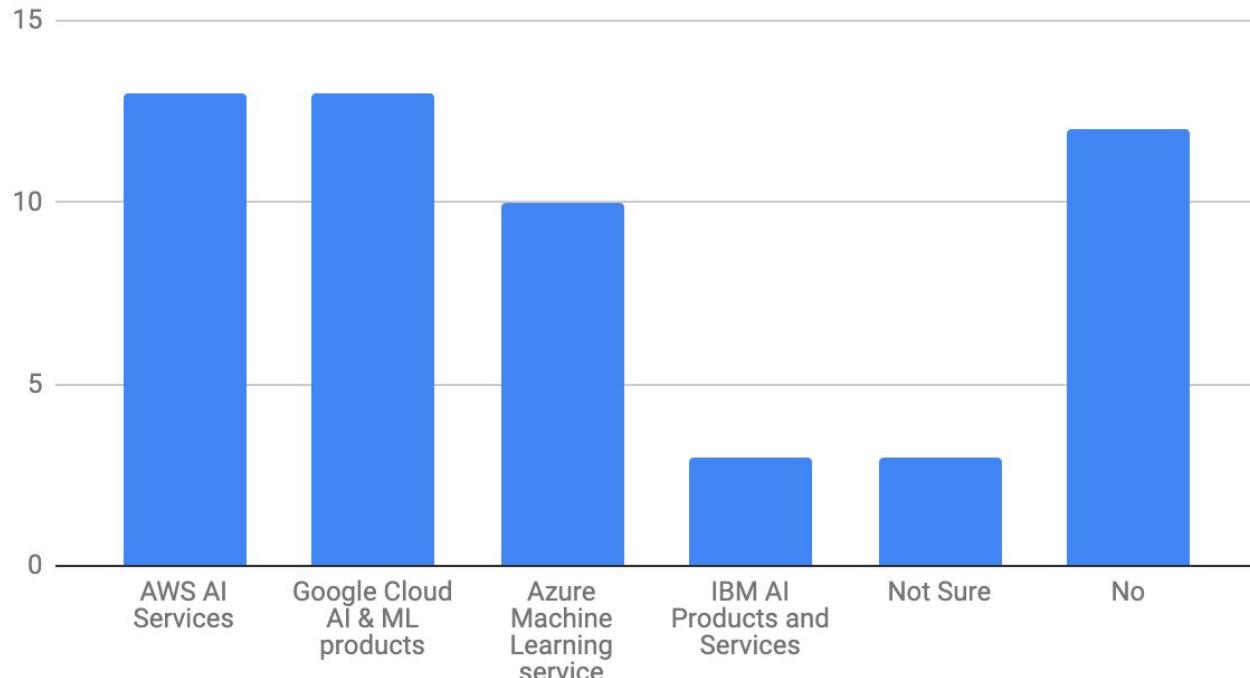
3.1. Have you ever heard about AI-as-a-Service business term?

39 odpowiedzi



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# Use of AI-related cloud services



Most of the people used Python

Have you ever used following types of AI-related cloud services:

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# Takeaways

General

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# Python in ML/DL/RL?

It is the language!

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# What do data scientists like?

Fast & Easy libraries:

Keras (+ TensorFlow)

PyTorch - rising star

RL - the time is now!

AI-as-a-Service - not sure, but might be nice to check

# Questions?

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# Do not ask sociologist about...

How can you become a data scientist in 3 weeks?

Which algorithm will solve an “A” or “B” problem?