# Deploy ML models

by Pratik Parmar aka Pintudo

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Hello!

# I AM Pratik Parmar

And I am here to bore you with Machine Learning.

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- App Idea: Dog Breed classifier

And dogs are like...

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1

# Let’s talk about basic Machine Learning workflow

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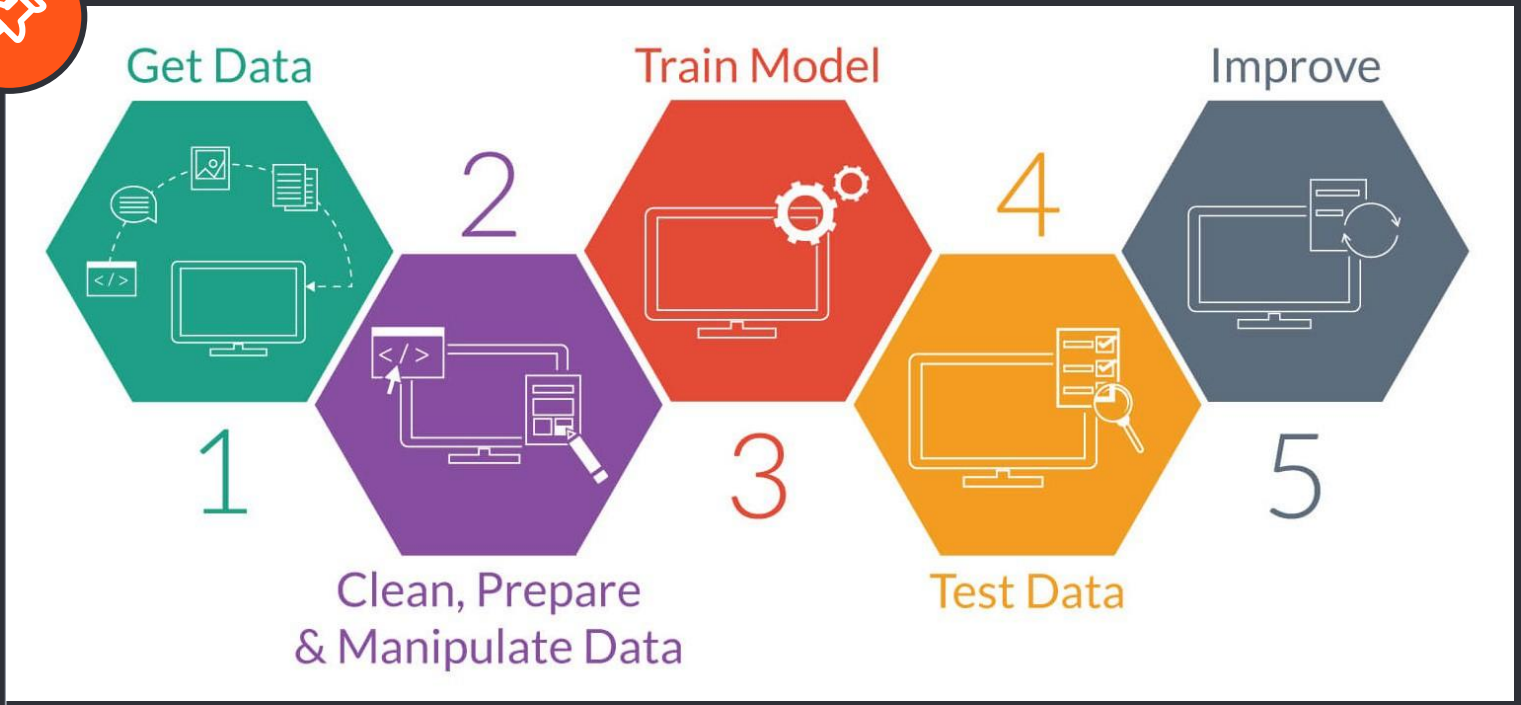
# General Machine Learning Workflow

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## After evaluation

The workflow for building machine learning models often ends at the evaluation stage:

you have achieved an acceptable accuracy, and "*ta-da! Mission Accomplished.*"


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## Why ???

Maybe, going the extra mile to put your model into production is not always needed. And even when it is, this task is delegated to a system administrator.


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*During my course at Coursera I was always asking myself—I have my model, which I can run in Jupyter Notebook and see the result, but what can I do with it? How can other use it?*

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# Why Demo ??

No matter how silly your project is, demonstrating our work is generally great way to get a wider audience interest


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2

# How to deploy Machine Learning models?

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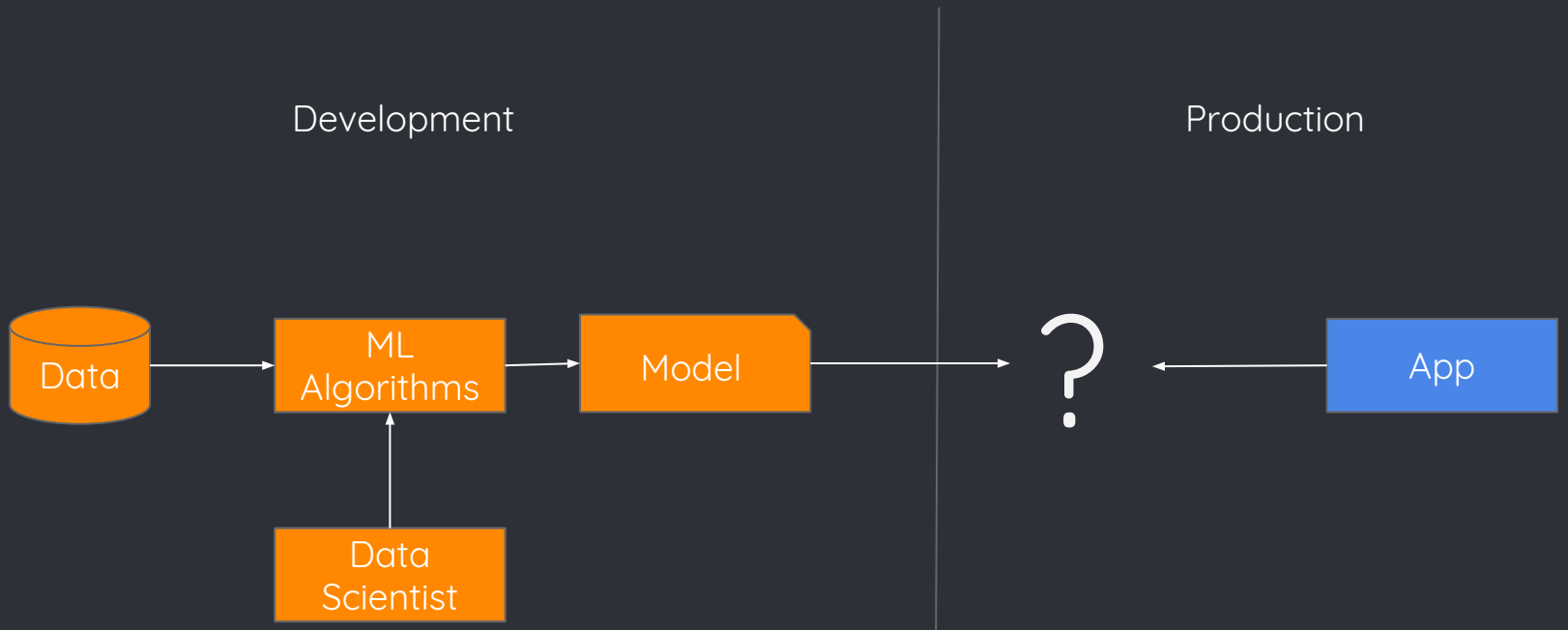
# How to deploy a ML model ?

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*Any guess*

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# Serving

Serving is how you *apply* a ML model, after you've trained it

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# 3 options to implement Machine Learning models

**Rewrite it**

Rewriting the whole code in the language that the software engineering folks work.

**API-first approach**

Create web API for your ML model using any web framework i.e. Flask or Django

**Tensorflow Serving**

TensorFlow Serving makes it easy to deploy new algorithms and experiments, while keeping the same server architecture and APIs. (API-first approach, but only for tensorflow)

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# Let’s get our hands dirty with the code

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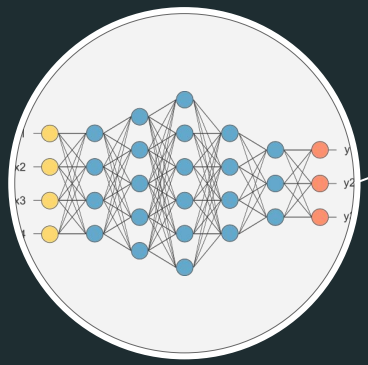
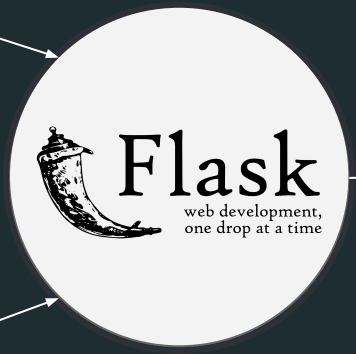
# Create simple Web API for Dog Image Classifier

Tensorflow



Pretrained Model




Flask


REST API

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# Which model to choose?

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# Pretrained model

For the sake of this session, we're gonna use retrained MobileNet Model

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## Main steps to to deploy Model are

Train the model  and saving the checkpoints on the disk

Load saved model and test that it works properly

Export model into Protobuf format (*.pb*)

Create the client to issue requests and make an API

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## Protobuf

Protocol buffers are Google's language-neutral, platform-neutral, extensible mechanism for serializing structured data – think *XML*, but smaller, faster, and simpler.

## Export the model into Protobuf

Tensorflow serving provides *SavedModelBuild* class to save the model as Protobuf.

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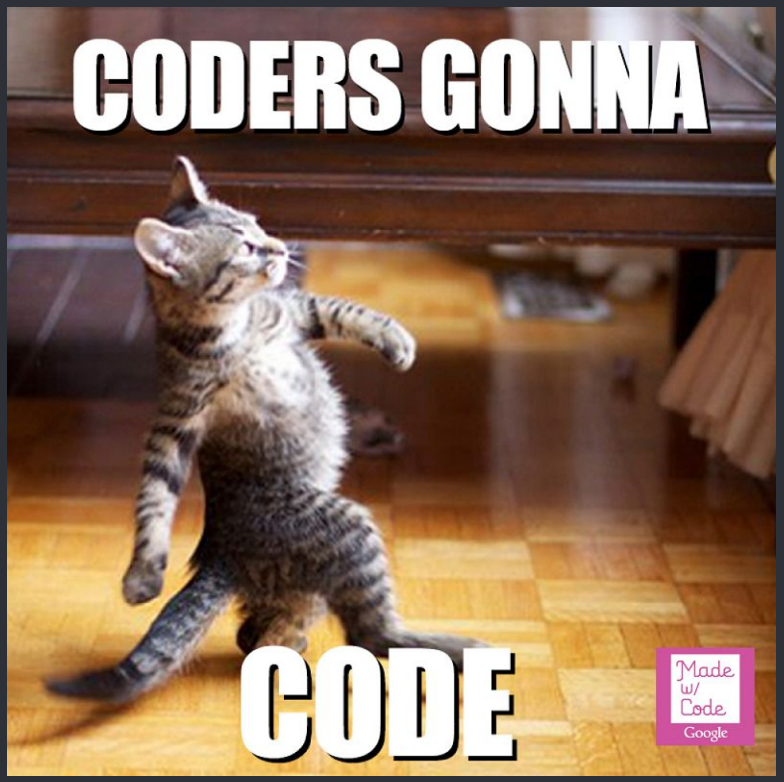
- Give some space because

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- Machine Learning for everyone


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- NO QUESTIONS PLEASE 👽

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# Thank you for bearing me 

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