

Deep Learning for Industries

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About me



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goodrahstar



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Author of

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Python Deep Learning Projects

9 projects demystifying neural network and deep learning models for building intelligent systems



Matthew Lamons, Rahul Kumar
and Abhishek Nagaraja

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Only Data Scientist can read it :

DE3p Larenn1g mhica3ns wrok smliair to h0w biarns wrok.

Tehse mahcnies wrok by s33nig f22Uy pa773rns and cnonc3t1ng t3Hm t0
fU22y cnoc3tps. T3hy wRok l4y3r by ly43r, j5ut lK1e a f1L37r, t4k1NG
cmopl3x scn33s aNd br3k41ng tH3m dwon itno s1pmLe iD34s.

Only Data Scientist can read it :

Deep Learning mechanism work similar to how brain work.

These machines works by seeing funny patterns and connecting them to funny concepts. They work layer by layer, just like a filter, taking complex scenes and breaking them down into simple ideas.



I want to be a

good

Data Scientist

Learning paradigm



Learning paradigm

- Research Papers
- Courses
- Blogs



Learning paradigm

2 papers a week

Listen to podcast

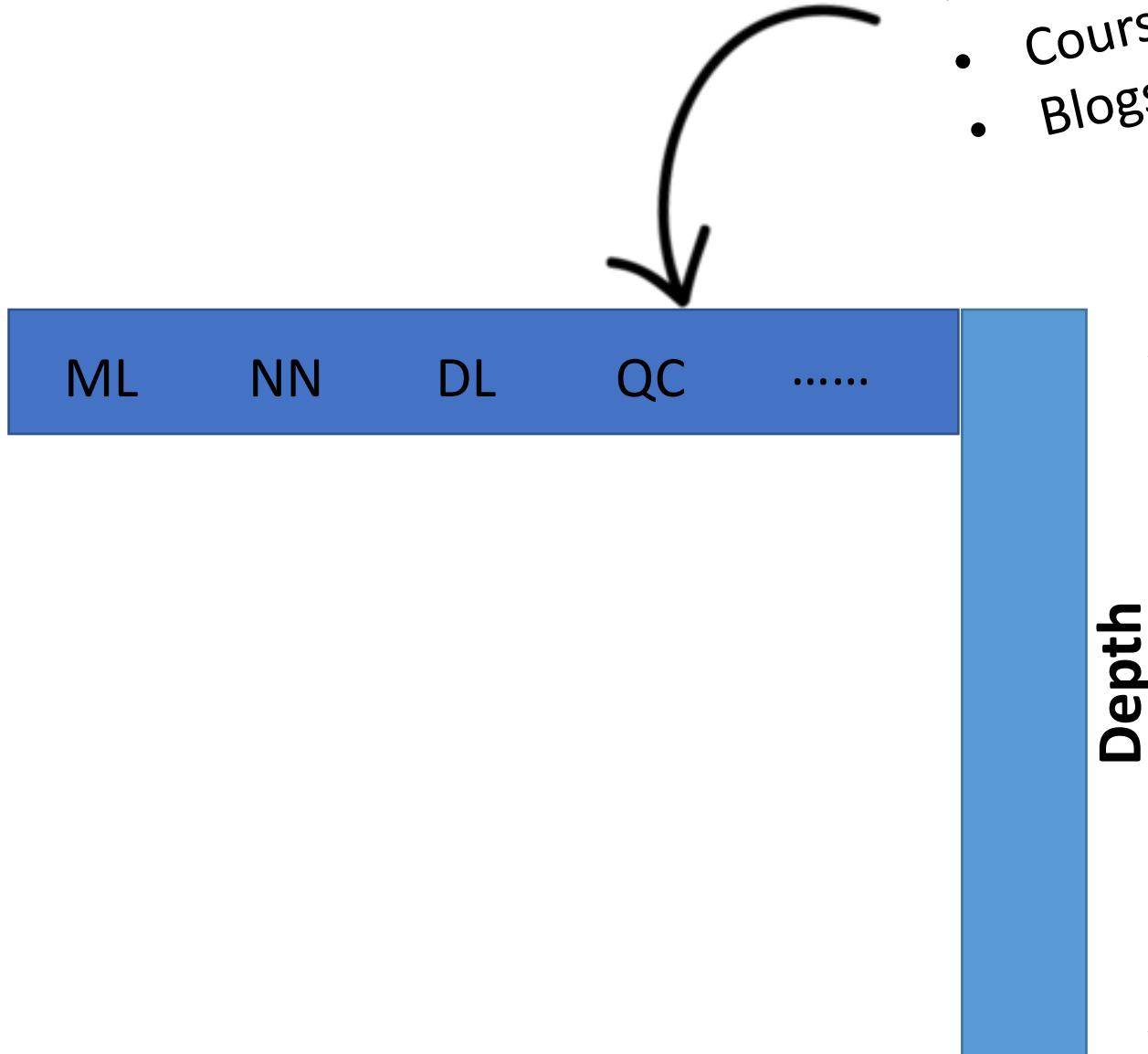
Follow influencers on twitter etc.

Follow NeurIPs, AAAI, CVPR, ICAPS, ICML

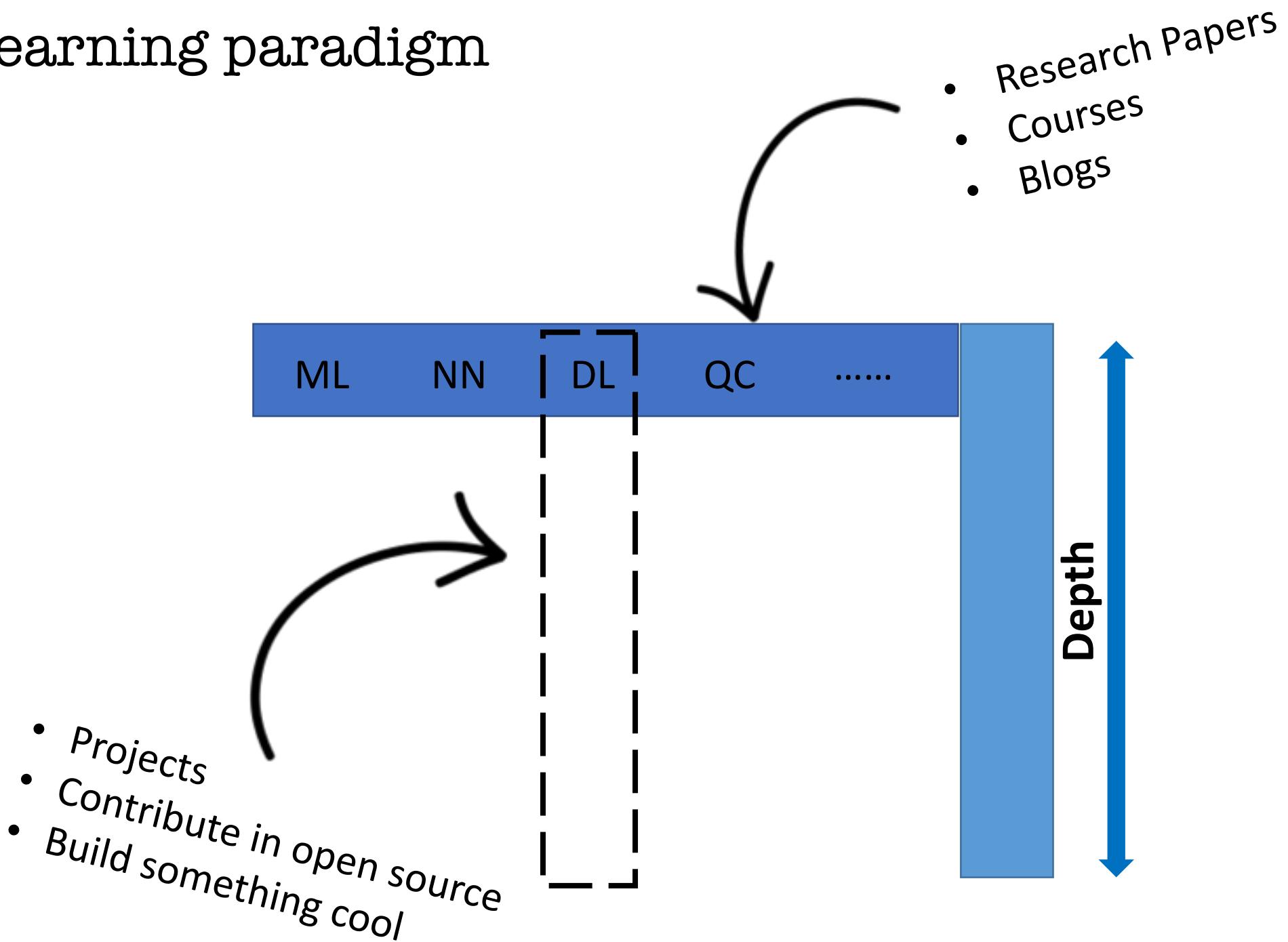


- Research Papers
- Courses
- Blogs

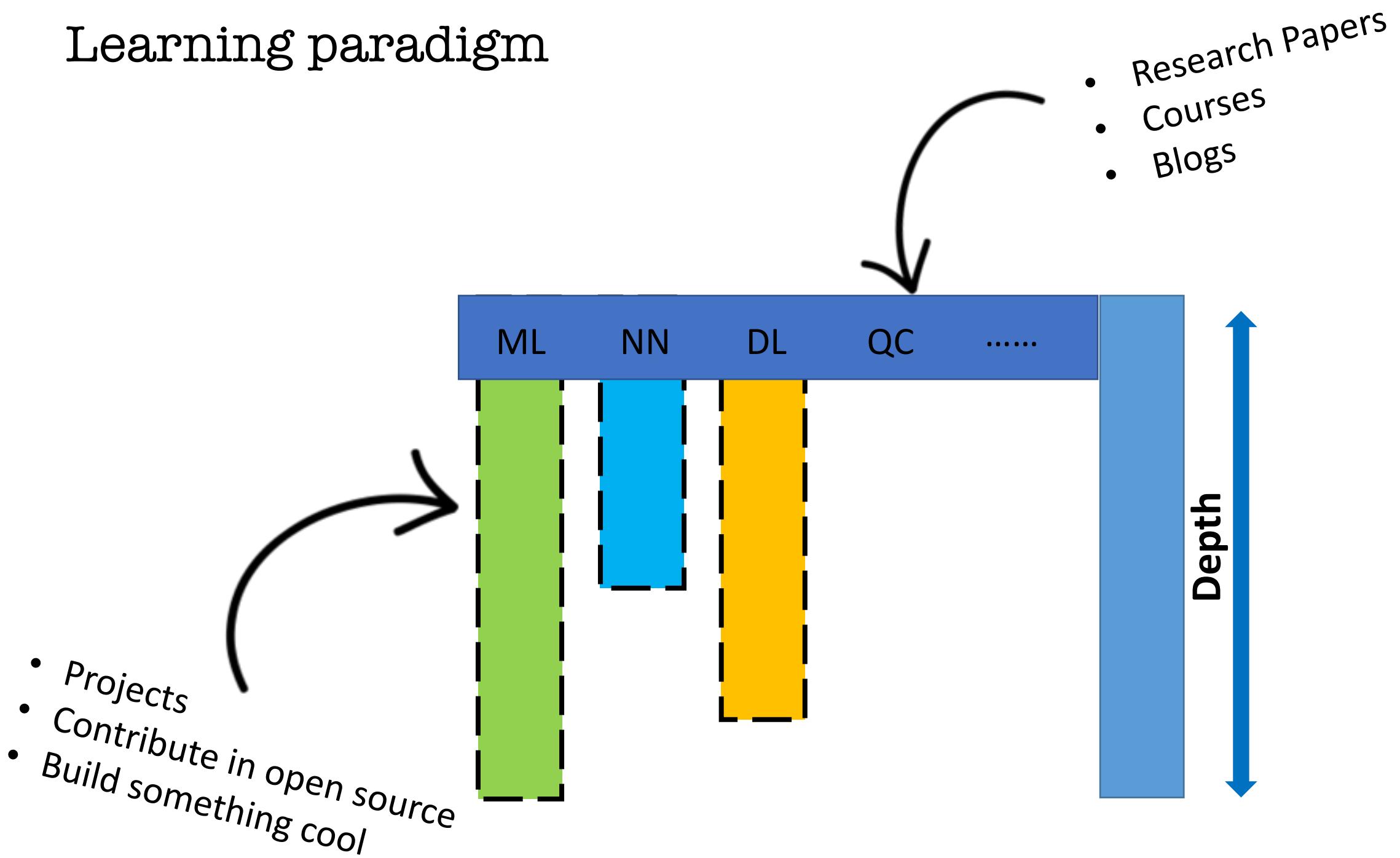
Learning paradigm



Learning paradigm



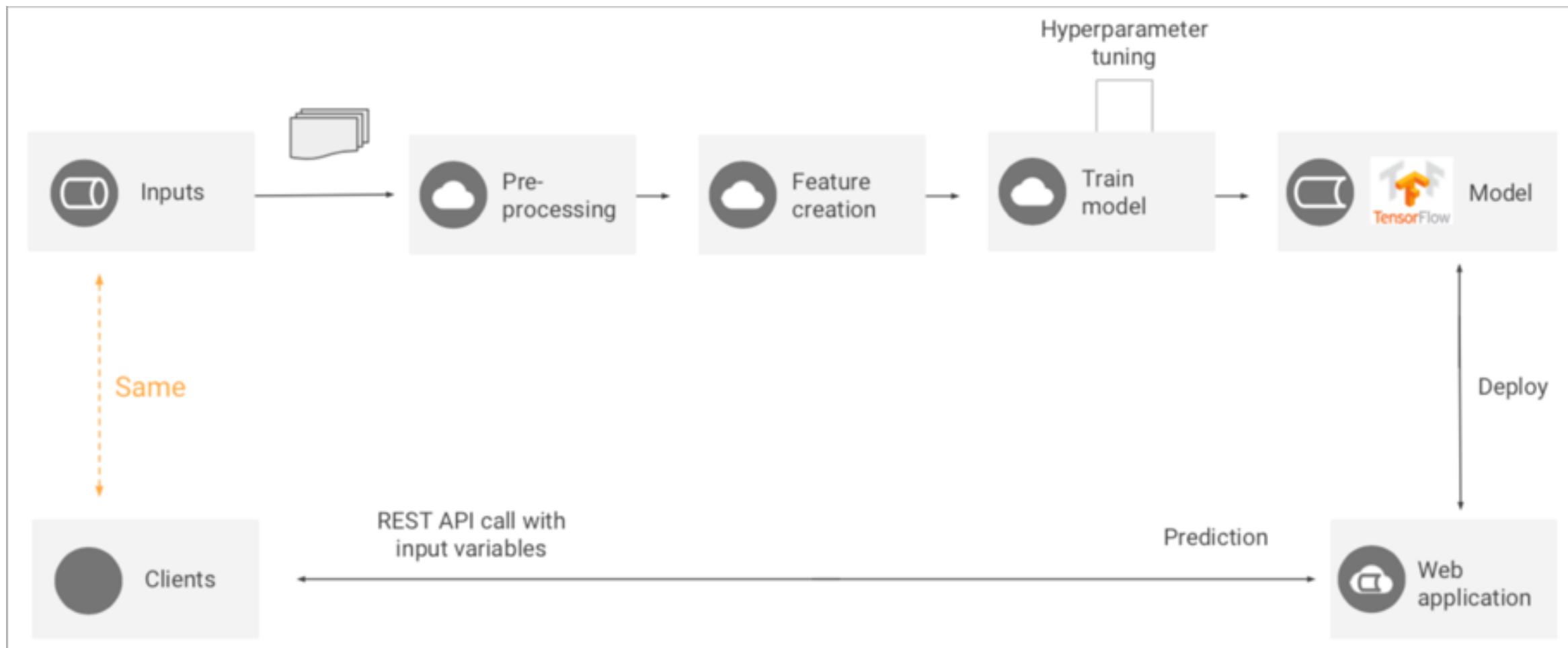
Learning paradigm



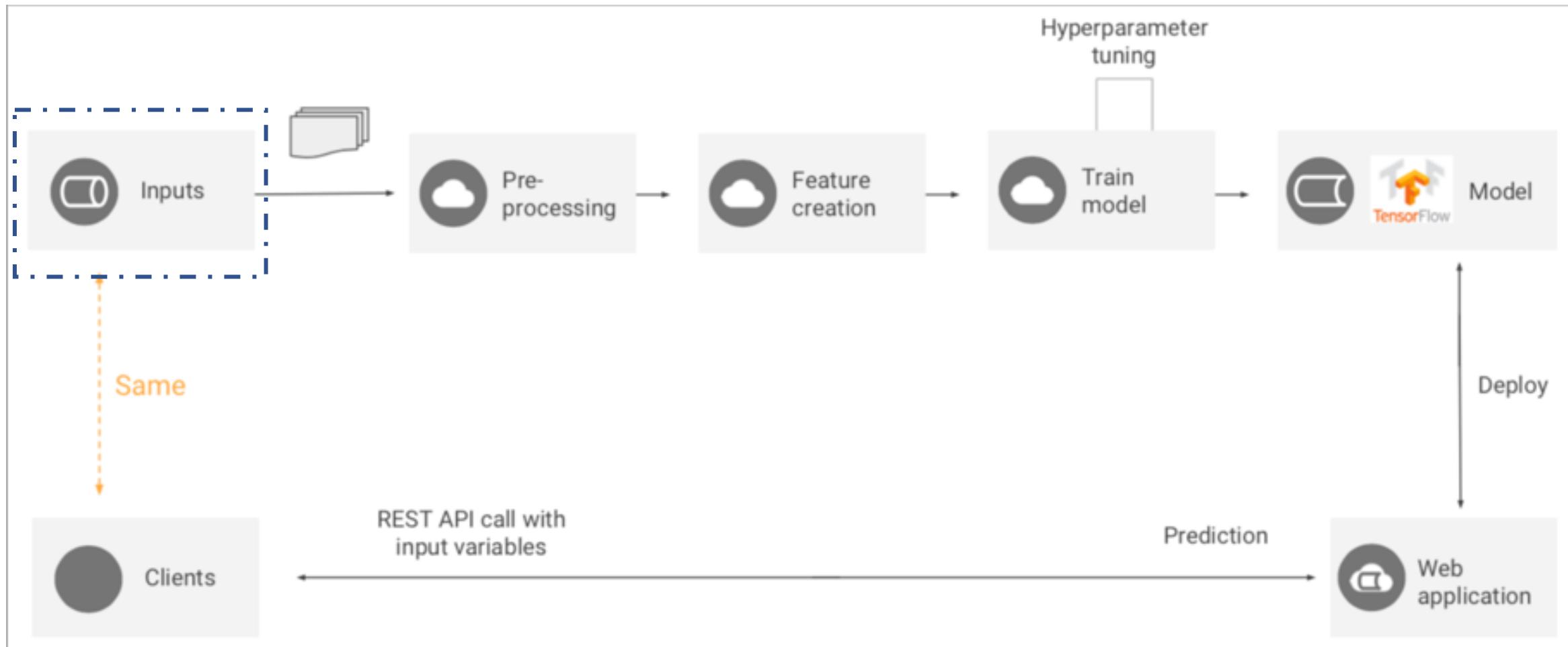
Is that it ... ?

Let's get
practical ...

End to End Pipeline



End to End Pipeline



End to End Pipeline : **INPUTS**

Data sources:

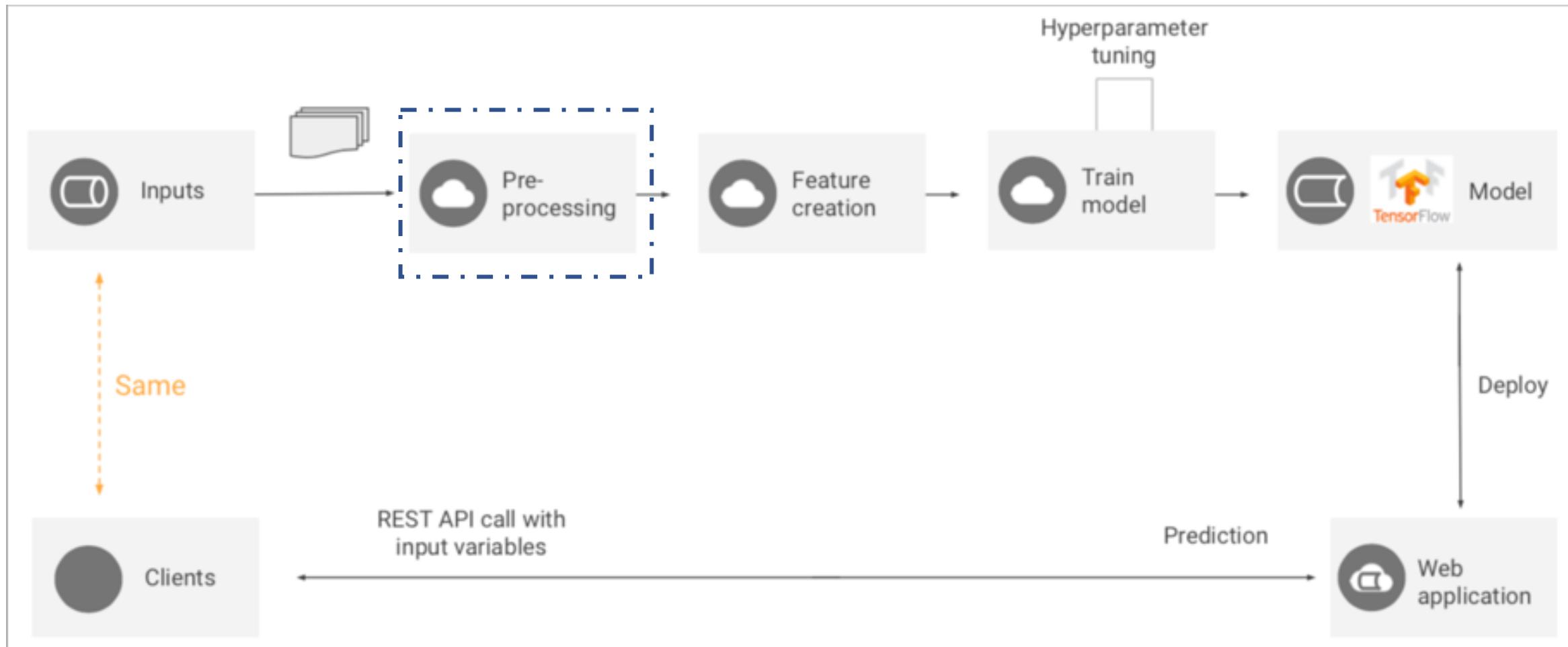
- Cameras
- CSV/ Excels
- Big data
- SQL databases
- Mongo DB

Key takeaway:

- Learn to build connectors
- Avoid I/O ops
- Use binary like pickles



End to End Pipeline



End to End Pipeline : PRE-PROCESSING

Why do I care ?

```
github Feminist-Software-Foundation complains about Reddit on a GitHub Pull Request
github Expose sps as web services on the fly.
github Show HN LinuxExplorer
github MySQL Minutiae InnoDB Internals
github Dish super simple conversion of hashes into plain ruby objects
github McIlroy's word frequency program in 1 line of ruby
github Show HN NodeRT Use any WinRT API from Node.js
github GoDoc tab completion zsh
github A better Sass mixin for Retina graphics
github Easily connect to Mobile Money
github Connecting users who don't speak a common language a social web experiment
github Ruby Jsonpipe with less than 20 lines code
github Easier Object.create attributes creation CoffeeScript
github pyreqauth - Python web auth decorator
github Riml Relaxed Vimscript source translator
github Comments NGINX and Unicorn
github Sublime text plugin open files based on class name
github RSA factors based on transmission and reflection coefficient
github ShowHN - bookmarklet to rearrange comments by time
github Show HN Simple HTML5 localStorage to do list app inspired by TiddlyWiki and Vim
github Scalarm A Simple Alarm That Does Not Block
github Single Image to Google Map in javascript
github Create new accounts on the fly with Texter
github Automatically answer to new Craigslist posts from your G mail account. Node
github Simple iOS deeplinking
github An animated javascript marker clustering library for Leaflet maps
github Tocdown - vim plugin displaying headlines of markdown files
github eBook about the padrino framework
github Worstscript Version 1.1.0.0.3.beta available now FREE
github Opskeleton a puppet vagrant fast workflow
github Fix stupid play pause default behaviour on mac OS X
github HackerNewsOnion MOTD in your Terminal
github Antirecaptcha enhancement and porting project
github Frank on Heroku
github Strongly Typed Markup Language
github TimeSeries Format Specification Proposal
github Variance.js for streams
github Javascript 3D Game Engine
```

Text classification

Entity Extraction

```
{
  "rasa_nlu_data": {
    "common_examples": [
      {
        "text": "hey",
        "intent": "greet",
        "entities": []
      },
      {
        "text": "howdy",
        "intent": "greet",
        "entities": []
      },
      {
        "text": "hey there",
        "intent": "greet",
        "entities": []
      },
      {
        "text": "hello",
        "intent": "greet",
        "entities": []
      },
      {
        "text": "hi",
        "intent": "greet",
        "entities": []
      },
      {
        "text": "i'm looking for a place to eat",
        "intent": "restaurant_search",
        "entities": []
      },
      {
        "text": "i'm looking for a place in the north of town",
        "intent": "restaurant_search",
        "entities": [
          {
            "start": 31,
            "end": 36,
            "value": "north",
            "entity": "location"
          }
        ]
      }
    ]
  }
}
```

End to End Pipeline : PRE-PROCESSING

Why do I care ?

In meteorology, precipitation is any product of the condensation of atmospheric water vapor that falls under **gravity**. The main forms of precipitation include drizzle, rain, sleet, snow, **graupel** and hail... Precipitation forms as smaller droplets coalesce via collision with other rain drops or ice crystals **within a cloud**. Short, intense periods of rain in scattered locations are called "showers".

What causes precipitation to fall?

gravity

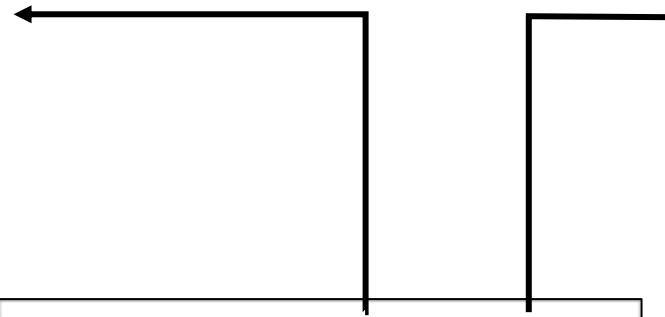
What is another main form of precipitation besides drizzle, rain, snow, sleet and hail?

graupel

Where do water droplets collide with ice crystals to form precipitation?

within a cloud

Figure 1: Question-answer pairs for a sample passage in the SQuAD dataset. Each of the answers is a segment of text from the passage.



	SQuAD 1.1	SQuAD 2.0
Train		
Total examples	87,599	130,319
Negative examples	0	43,498
Total articles	442	442
Articles with negatives	0	285
Development		
Total examples	10,570	11,873
Negative examples	0	5,945
Total articles	48	35
Articles with negatives	0	35
Test		
Total examples	9,533	8,862
Negative examples	0	4,332
Total articles	46	28
Articles with negatives	0	28

Table 2: Dataset statistics of SQuAD 2.0, compared to the previous SQuAD 1.1.

Article: Endangered Species Act

Paragraph: "... Other legislation followed, including the Migratory Bird Conservation Act of 1929, a **1937 treaty** prohibiting the hunting of right and gray whales, and the **Bald Eagle Protection Act of 1940**. These **later laws** had a low cost to society—the species were relatively rare—and little **opposition** was raised."

Question 1: "Which laws faced significant **opposition**?"

Plausible Answer: **later laws**

Question 2: "What was the name of the **1937 treaty**?"

Plausible Answer: **Bald Eagle Protection Act**

Figure 1: Two unanswerable questions written by crowdworkers, along with plausible (but incorrect) answers. Relevant keywords are shown in blue.

End to End Pipeline : PRE-PROCESSING

But ...

0	Jag skulle vilja avbryta min order 686853 om de går! __label_51544721	Avbeställning::Order skickad
1	Köpte en Vitamix i dec 2017. Den fungerar nu inte. Hur kan ni hjälpa mig med det? __label_52894621	Reklamation::Defekt vara - Steg 1 - Bildbevis
2	jeg har fornylig handlet hos jer, hvor jeg undlod at krydse af, at jeg ville modtage nyhedsbrev. Alligevel får jeg disse fra jer.	Övrigt::Avregistrering nyhetsbrev
3	Hej	Kontakta kund::Utgått - En artikel beställd
4	Hejsan, fick precis min vara och har fått helt fel!!!__label_53039291 Placerings: Inlagrad Artikelnr/Vendor: 28714947Gammalt EAN Saknas Hej, Vi har behandlat en beställning **672668** från dig och skickade ut ditt paket. Det utskickade pakete..	Reklamation::Felplack - Steg 1
5	Placerings: Inlagrad Artikelnr/Vendor: 28714947Gammalt EAN Saknas Hej, Vi har behandlat en beställning **672668** från dig och skickade ut ditt paket. Det utskickade pakete..	EAN matchar inte i EWMS/Zion
6	Placerings: Inlagrad Artikelnr/Vendor: 28397868Gammalt EAN Saknas avbeställning av skyddshuv 125 x 183 x 54 ordnr 671881 Lennart Andersson Händelövägen 46 68385 Norrköping__label_51555641 Hej, Vi har behandlat en beställning **683357** från dig och skickade ut ditt paket. Det utskickade pakete..	Returhantering::Ej uthämtad försändelse - Ordervärde över 199 kr
7	Placerings: Inlagrad Artikelnr/Vendor: 28397868Gammalt EAN Saknas avbeställning av skyddshuv 125 x 183 x 54 ordnr 671881 Lennart Andersson Händelövägen 46 68385 Norrköping__label_51555641 Hej, Vi har behandlat en beställning **683357** från dig och skickade ut ditt paket. Det utskickade pakete..	EAN matchar inte i EWMS/Zion
8	Hej Lotta! Vi har nu mottagit och godkänt din retur **621669**.	Returhantering::Avbeställning
9	Hej, Vi har behandlat en beställning **683357** från dig och skickade ut ditt paket. Det utskickade pakete..	Returhantering::Ej uthämtad försändelse - Ordervärde under 199 kr
10	Hej Lotta! Vi har nu mottagit och godkänt din retur **621669**.	Returhantering::Retur - Mottagen och godkänd
11	Hej! Vi har nu mottagit och godkänt din retur **673389**.	Returhantering::Retur - Mottagen och godkänd
12	Hej! Jag har gjort en anmälan om retur på tre tallrikar Gerbera. Tallrikar var för stora att åta på, lite	Returhantering::Skicka ut returfraktsedel
13	Hej Tina! Vi har nu modtaget og godkendt din retur **671887**.	DK::Returhantering::Retur - Mottagen och godkänd
14	Hej Steen! Vi har nu modtaget og godkendt din retur **664888**.	DK::Returhantering::Retur - Mottagen och godkänd
15	Hej Jens! Vi har nu modtaget og godkendt din retur **650542**.	DK::Returhantering::Retur - Mottagen och godkänd
16	Hej! Vi har nu modtaget og godkendt din retur **666884**.	DK::Returhantering::Retur - Mottagen och godkänd
17	Hej! Vi har nu modtaget og godkendt din retur **659291**.	DK::Returhantering::Retur - Mottagen och godkänd
18	Hej Helle! Vi har nu modtaget og godkendt din retur **674675**.	DK::Returhantering::Retur - Mottagen och godkänd

End to End Pipeline : PRE-PROCESSING

0	Merhabalar Pro yazılım ve eğitimi satın aldım amazon satış hesabımı açtım hersey tamam fakat	Yazılım Support
1	Merhaba. Pro yazılıma kaya.online hesabım ile giriş yapmak istediğimde E-posta adresiniz	Yazılım Support
2	PRO yazılıma giriş yapmak istediğimde, "E-posta adresiniz veya Sifreniz hatalı!" uyarısı alıyorum..__label__360016994153	Yazılım Support
3	Merhaba ismim Caner Saltık dün tarafınızdan gelen sözleşmeyi imzaladım ve 20 dolarlık ödemeyi yaptım, şimdi ne yapmam gerekiyor hesabımı nasıl başlayacağım Ekim_	Stripe Bağlantı Adımları-
4	merhabalar, amazon fba eğitimi hangi eğitim setinizde acaba, bu yazılımlar ve diğer p_	Dropshipping içerik
5	Daha amazon hesabım kayıt aşamasında ama amazon hesabım ile kaya online hesap mail adresleri birbirinden farklı ondan dolayı mı giriş yapamıyorum? iyi çalışmalar__lab_	Yazılım Support
6	şubat ayında aldığım ve uzun süre kullandığım hesabım şifre hatası veriyor. lakin siteye şifrem ile giriş yapabiliyorum.	Tarayıcı Yeniden
7	Merhabalar pro yazılım linkini gönderirmisiniz??__label__360022588274	PRO
8	Merhaba,	Tarayıcı Yeniden
9	merhaba danışmanlık paketinin içeriği nedir acaba bilgi alabilirmiyim ?__label__360010317053	Danışmanlık linki
10	Bir ayrıcalık gösterseniz olmazmı Ekim Kaya bey o eğitimi ben almak istemiyorum lütfen rica ediyorum iade alın ödeyecek gücüm yok siz onu başka bir arkadaşa satars_	Iade Metni
11	İyi günler, bu konu/olay hakkında bilgi almak istiyorum. 0543 926 0640 telefon numaram, dönüş sağlarsanız çok sevinirim__label__360023919753	Dropshipping içerik
12	Merhabalar! Dropshipping egitim satın aldım. 1- Pexda'ya üye olmak istiyorum.	Pexda Abonelik Linki
13	Merhabalar! Dropshipping egitim satın aldım. 1- Pexda'ya üye olmak istiyorum.	Stripe Bilgi
14	Merhabalar Ben Kurs Almak İstiyorum Fakat Yaşım 16 Henüz Bir Kredi Kartım Yok Acaba Kayıt Olabilir miyim böyle birsey mümkün mü ? İninal - paypal kart vs ön ödemeli ka_	+18
15	Ekim Nazim Kaya Founding Partner Botego Inc.	Stripe Bilgi
16	Normal versiyonu alıp daha sonra 100 dolar farkla pro sürümü yükseltebilir miyiz__label__360028305034	Extenship Satın Al
17	Merhaba Geçen ay kurs satın aldım ancak daha satışa başlamadım.Ekim beyin bir videosunda	Iade Metni
18	Ekim Bey Merhaba ; Nasılınız ,	zohho

0	Hej !_x000D_ _x000D_ Jag skickade en mejlförfrågan för några veckor sedan men kanske kom mejlet på villovägar så jag tänkte att det var b...	65722231
1	Detta är en uppföljning till din föregående förfrågan #324737 "Din reklamation hos Kitchen..." Hej har ni inte mottagit min retur ännu?...	51638752
2	Hej !_x000D_ Önskar avsluta mejlreklam från er. _x000D_ Mvh Lena Eriksson	153171465
3	Hej! Hämtade hem nedanstående lev idag 29/3_x000D_ När vi packade upp våffeljärnet är det totalt sönder på insidans ovansida. Se bif foto. Y...	54353902
4	Hej! Jag har väntat väldigt länge nu på min order som verkar vara i lager om man kollar er hemisda! Om ni inte skickar den snart måste jag...	51555641
5	Hei! Hvor blir det av min bestilling med ordrenummer: 625596 ? Det har gått snart to måneder siden jeg bestilte den 10. Mars. For dårlig...	53375672
6	Placering: Karantän manuella Inköpsnummer: Saknas (Saknas inköpsnummer- Bifoga information som kommit med leveransen alternativt ett urval art...	360000722429
7	Jag har inte fått nån faktura till min order/ äggkokaren!_x000D_ Mvh/ Maha Hannouneh	52777532
8	*** Call Info *** Caller Number: 0702178396 Caller Name: KitchenTime SE Leverans Call To: 0188008001 Queue: KitchenTime-SE UniqueId: 152568150...	52520151
9	Hej_x000D_ Jag har köpet hos er WV5 Premium Fönstertvätt – Kärcher vill nu reklamera att den laddar inte eftersom jag har 3års garantin så vill g...	88526025
10	Hej Joakim tack för ditt meddelande! Vi beklagar verkligen att produkten inte lever upp till dina förväntningar. Vi har tagit kontak...	53617522
11	Hej KitchenTime._x000D_ _x000D_ Vedr. ordre: 626851_x000D_ _x000D_ Jeg har i dag modtaget min ordre (4 glas). Der er desværre fejl i det ene ...	52894621

Founding Partner Botego Inc.

Normal versiyonu alıp daha sonra 100 dolar farkla pro sürüme yükseltebilir miyiz_label_360028305034

Extenship Satın Al

Merhaba

Geçen ay kurs satın aldım ancak daha satışa başlamadım.Ekim beyin bir videosunda

iade Metni

Ekim Bey Merhaba ;
Nasılsınız ,

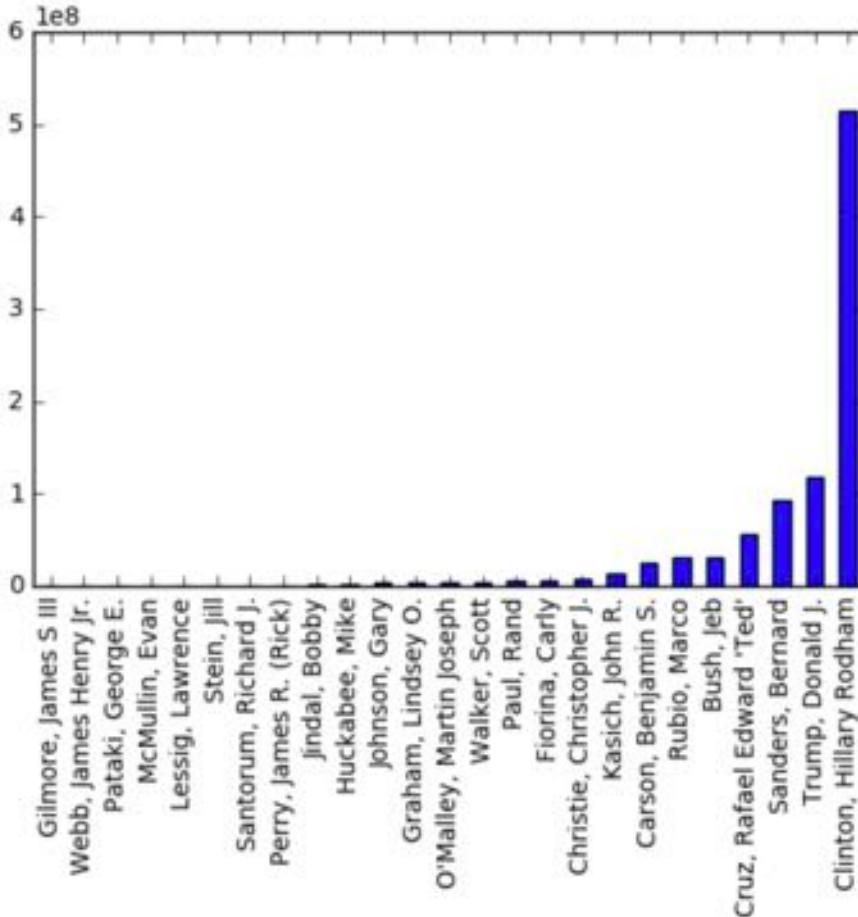
zohho

0	Hej!_x000D_ _x000D_ Jag skickade en mejlförfrågan för några sedan men kanske kom mejlet på villovägar så jag tänkt Detta är en uppföljning till din föregående förfrågan hos Kitchen..." Hej har ni inte	1555641
1	Hej!_x000D_ Önskar avsluta mejlreklam från Eriksson	53375672
2	Hej! Hämtade hem nedanstående lev våffeljärnet är det totalt sön	360000722429
3	Hej! Jag har väntat väldigt lager om man kollar er	52777532
4	Hei! Hvor blir de har gått snart	52520151
5	Placering: Bifoga	88526025
6	Jag	53617522
7	caller Name: KitchenTime SE enTime-SE UniqueId: 152568150...	52894621
8	premium Fönstertvätt – Kärcher vill artersom jag har 3års garantin så vill g...	
9	eddelande! Vi beklagar verkligen att till dina förväntningar. Vi har tagit kontak...	
10	_x000D_ Vedr. ordre: 626851_x000D_ _x000D_ Jeg min ordre (4 glas). Der er desværre fejl i det ene ...	
11	sonra 100 dolar farkla pro sürüme yükseltebilir	
	Extenship Satın Al	
	İade Metni	
	zohho	

End to End Pipeline : **PRE-PROCESSING**

Learn to visualization the data

Out[63]: <matplotlib.axes._subplots.AxesSubplot at 0x12b483780>

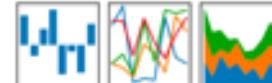


matplotlib

	name	age	gender	state	num_children	num_pets
0	john	23	M	california	2	5
1	mary	78	F	dc	0	1
2	peter	22	M	california	0	0
3	jeff	19	M	dc	3	5
4	bill	45	M	california	2	2
5	lisa	33	F	texas	1	2
6	jose	20	M	texas	4	3

pandas

$$y_{it} = \beta^T x_{it} + \mu_i + \epsilon_{it}$$



End to End Pipeline : **PRE-PROCESSING**

Understand the important patterns

.[RegEx]*

/([A-Z0-9])\w+/g

Text 28 matches (0.2ms)

RegExr was created by gskinner.com, and is proudly hosted by Media Temple.

Edit the Expression & Text to see matches. Roll over matches or the expression for details. PCRE & Javascript flavors of RegEx are supported.

The side bar includes a Cheatsheet, full Reference, and Help. You can also Save & Share with the Community, and view patterns you create or favorite in My Patterns.

Follow me :: at www.hellorahulk.com

Explore results with the Tools below. Replace & List output custom results. Details lists capture groups. Explain describes your expression in plain English.

Extracting Capital letter words

Source: <https://regexr.com>

End to End Pipeline : **PRE-PROCESSING**

Extract Noise from the data

.[RegEx]*



The logo features a blue circular border with the text "GENERAL DATA PROTECTION REGULATION" curved along the top. Inside the circle, the word "GDPR" is written in large, bold, black letters, with "READY" in smaller black letters below it. A large red checkmark is centered at the bottom.

Text

2 matches (0.6ms)

/([\w\.\-_]+)?\w+@\[\w\-_]+\(\.\w+\){1,}

Kære Hiper hvordan Søren kan de
og vælger et andet selskab da
gennemført??!
/Juli Broby
www.hellorahulk.com
På man. den 8. okt. 2018 kl.
Velkommen til Hiper#yiv550624126
Helvetica sans-serif; font-size:1
Med venlig hilsen
Hiper
|

he??? Det er lige før jeg opgir
ager jer 3 uger at få
> skrev:
la Neue".... "Helvetica"....
skrive til kundeservice@hiper.dk

Extracting emails

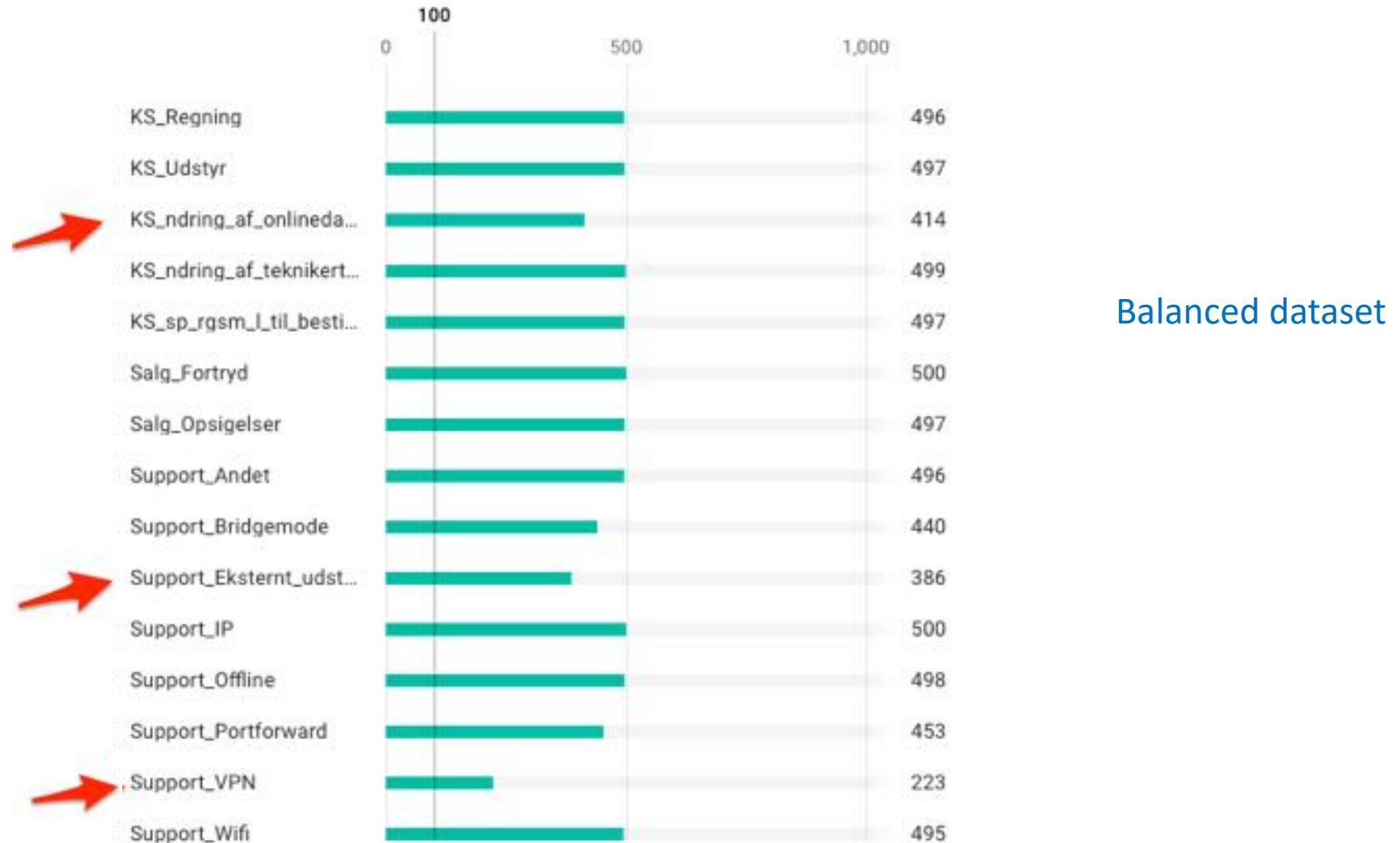
Source: <https://regexr.com>

End to End Pipeline : **PRE-PROCESSING**

Understand the data distribution, outliers, skewed data

Perform Data Argumentation

Balanced dataset



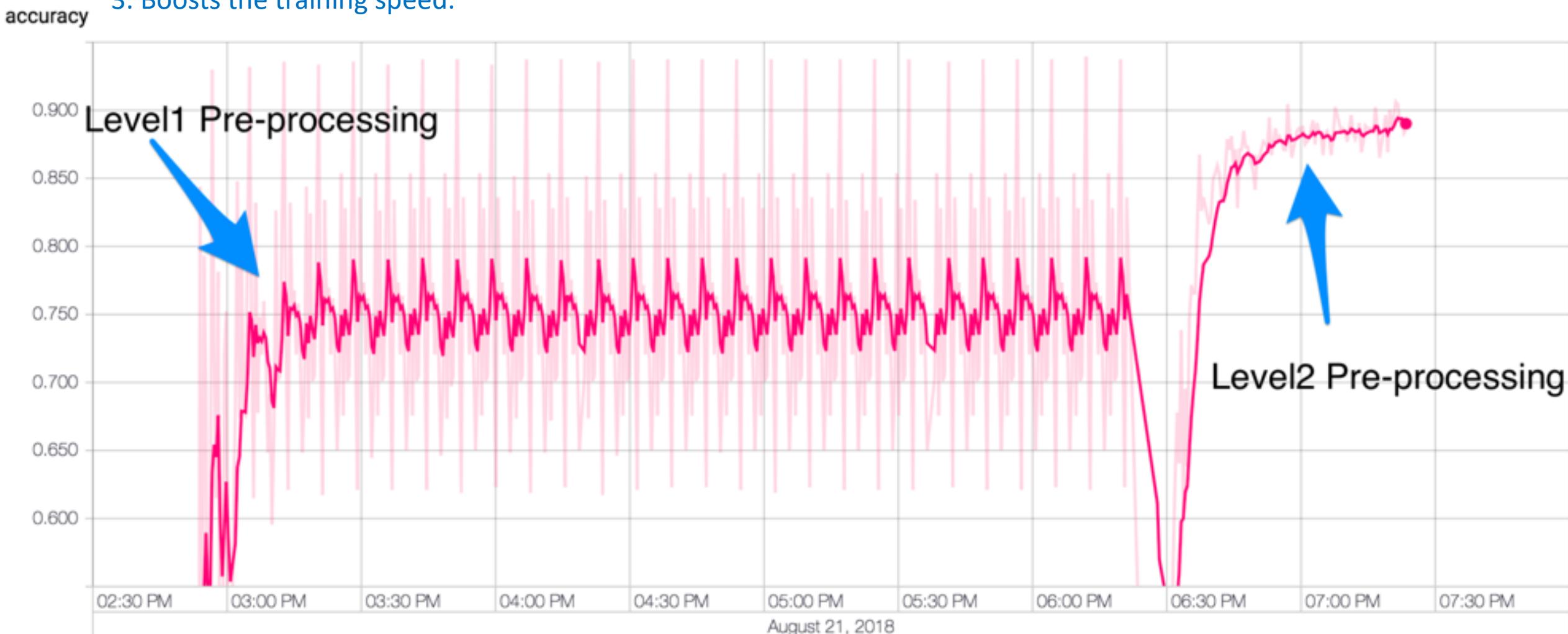
End to End Pipeline : **PRE-PROCESSING**

Understand the data distribution, outliers, skewed data

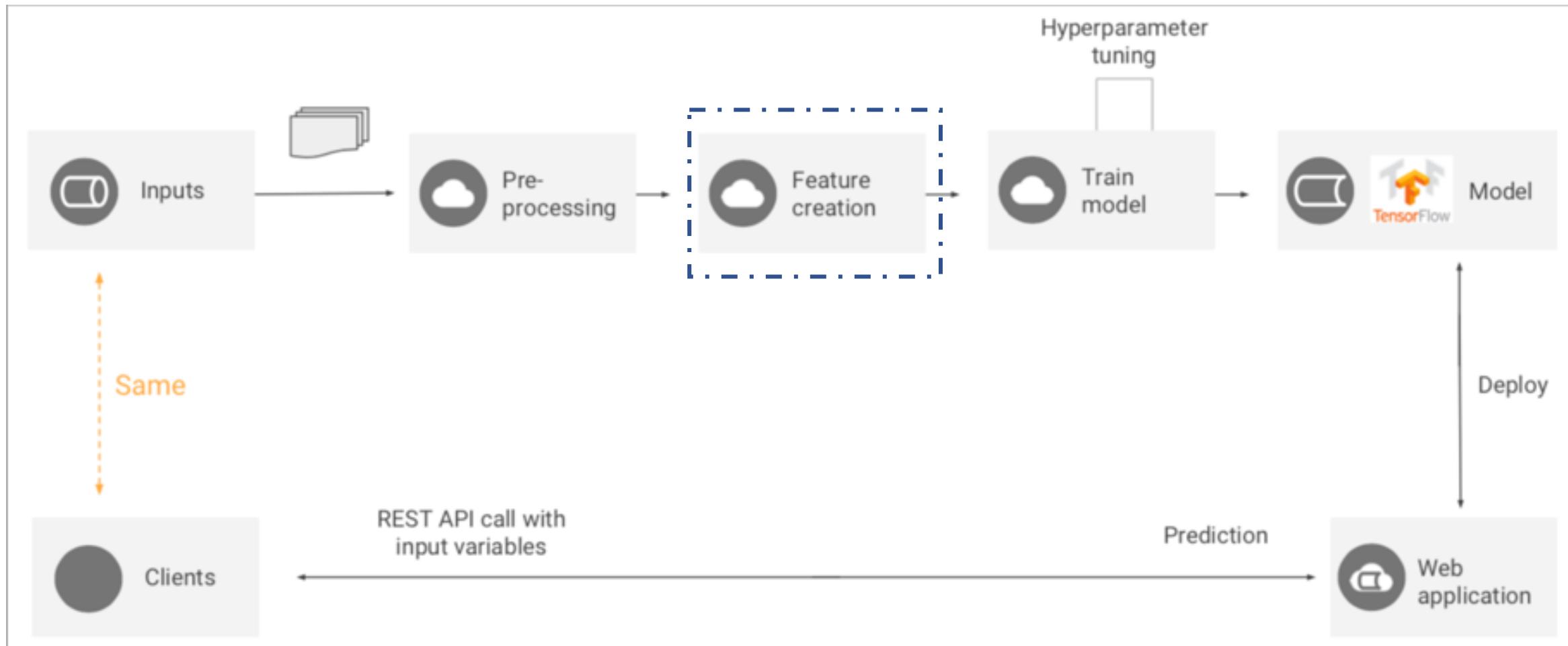


End to End Pipeline : **PRE-PROCESSING**

1. Better generalization of the model.
2. Better accuracy.
3. Boosts the training speed.



End to End Pipeline

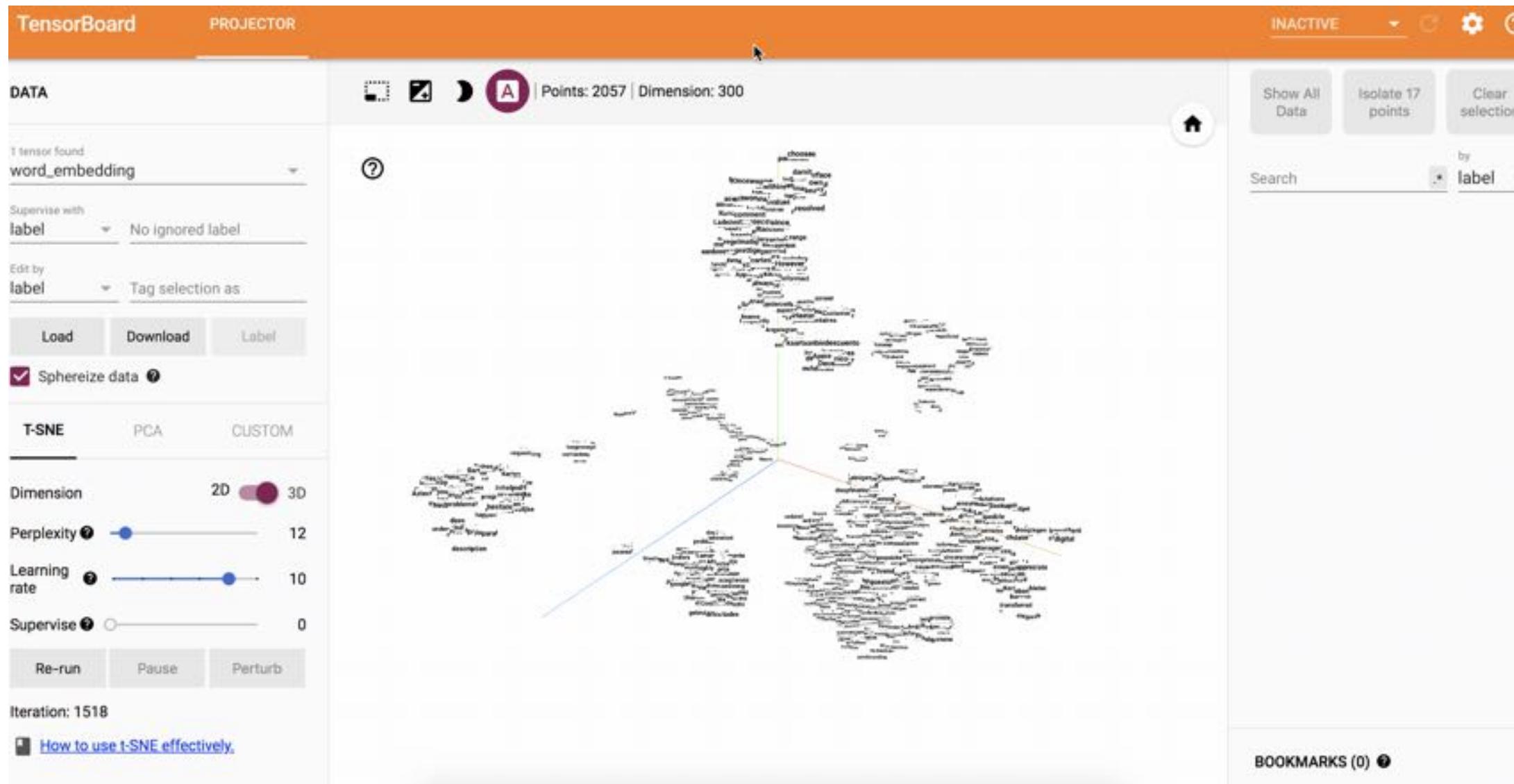


End to End Pipeline : **FEATURE CREATION**

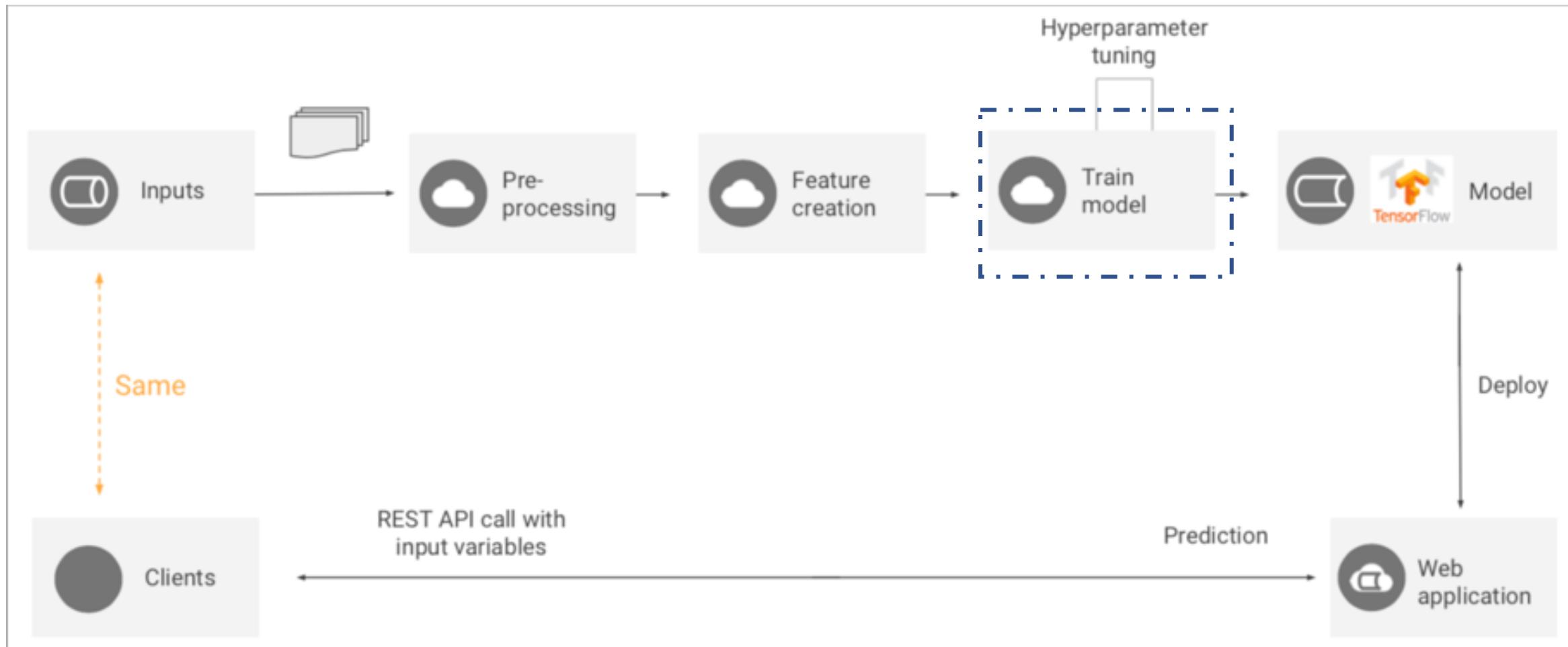
Representing the word using various feature representations:

- Morphological = [(prefix, **over**-), (root, **fit**), (suffix=imperfect tense, -ing)]
- Unigrams = ['o', 'v', 'e', 'r', 'f', 'i', 't', 't', 'i', 'n', 'g']
- Bigrams = ['ov', 've', 'er', 'rf', 'fi', 'it', 'tt', 'ti', 'in', 'ng']
- Trigrams = ['ove', 'ver', 'erf', 'rfi', 'fit', 'itt', 'tti', 'tin', 'ing']
- One-hot = [0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
- Word vector = [-0.26, 0.34, 0.48, -0.06, 0.16, 0.11, 0.13, -0.15, 0.47, -0.49, 0.07, -0.39, -0.13, -0.15, 0.06, 0.09]
- ...

End to End Pipeline : **FEATURE CREATION**

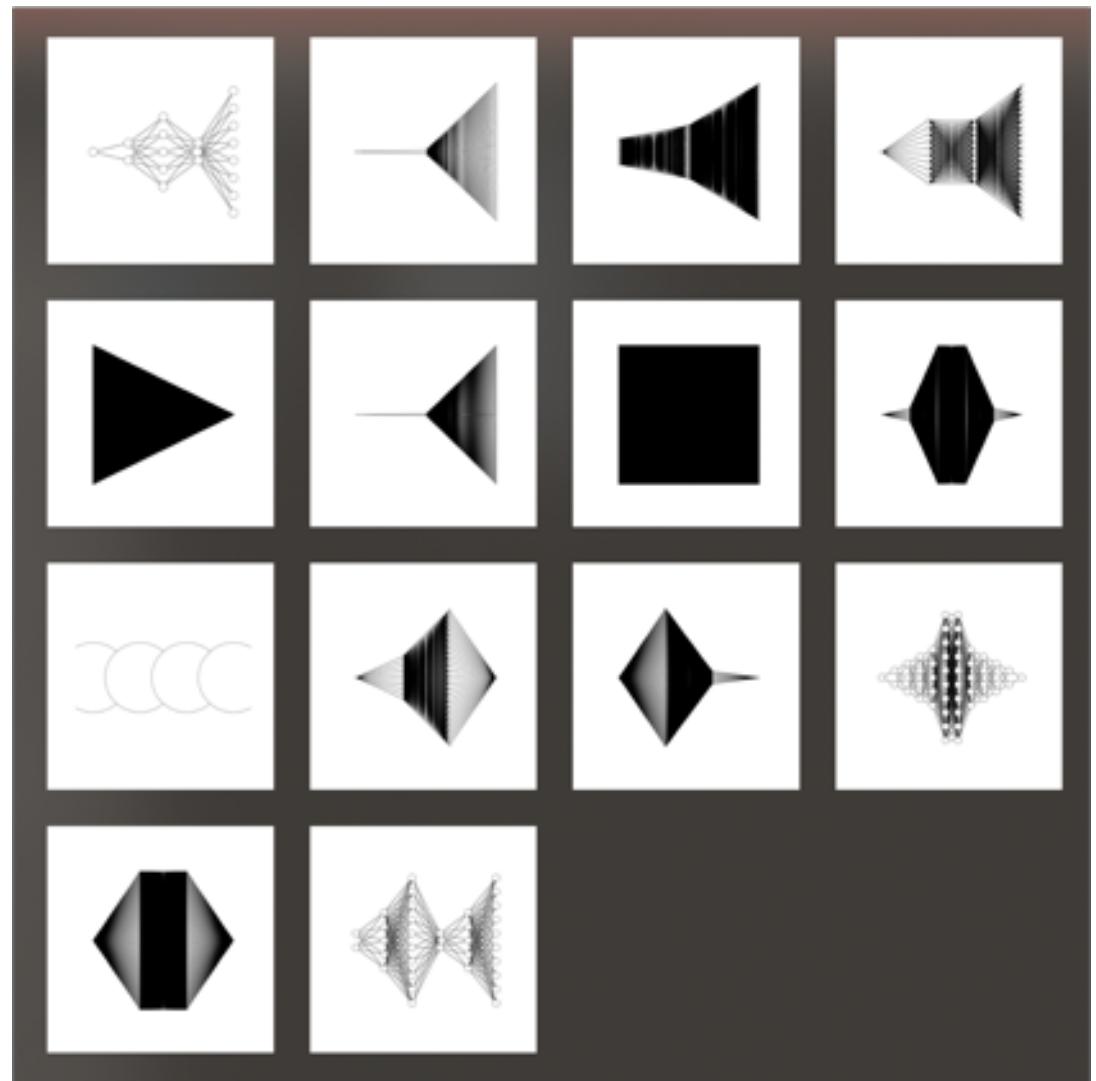
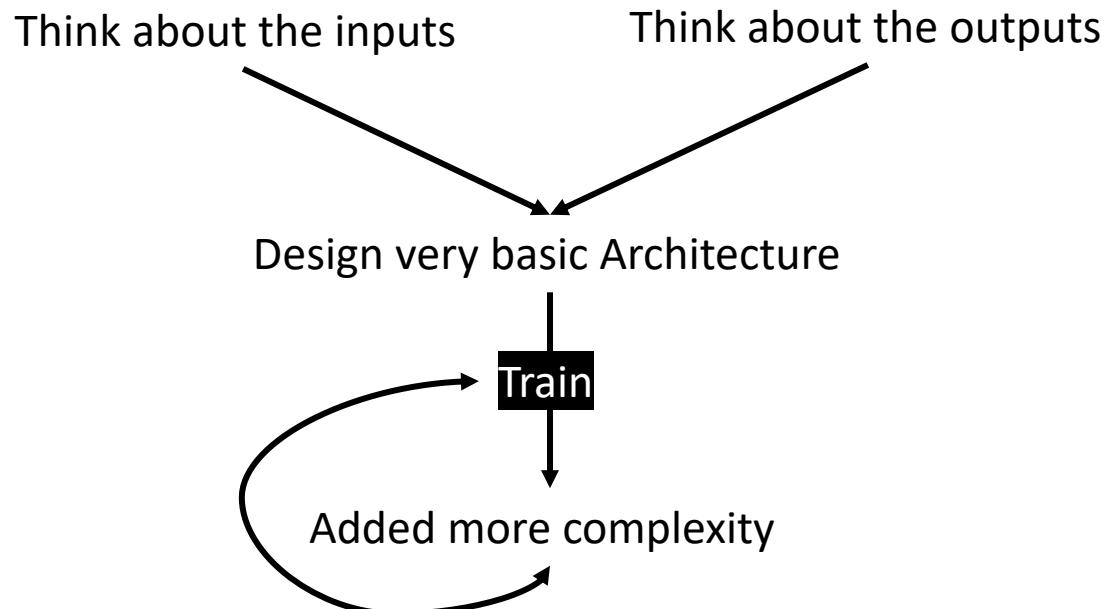


End to End Pipeline



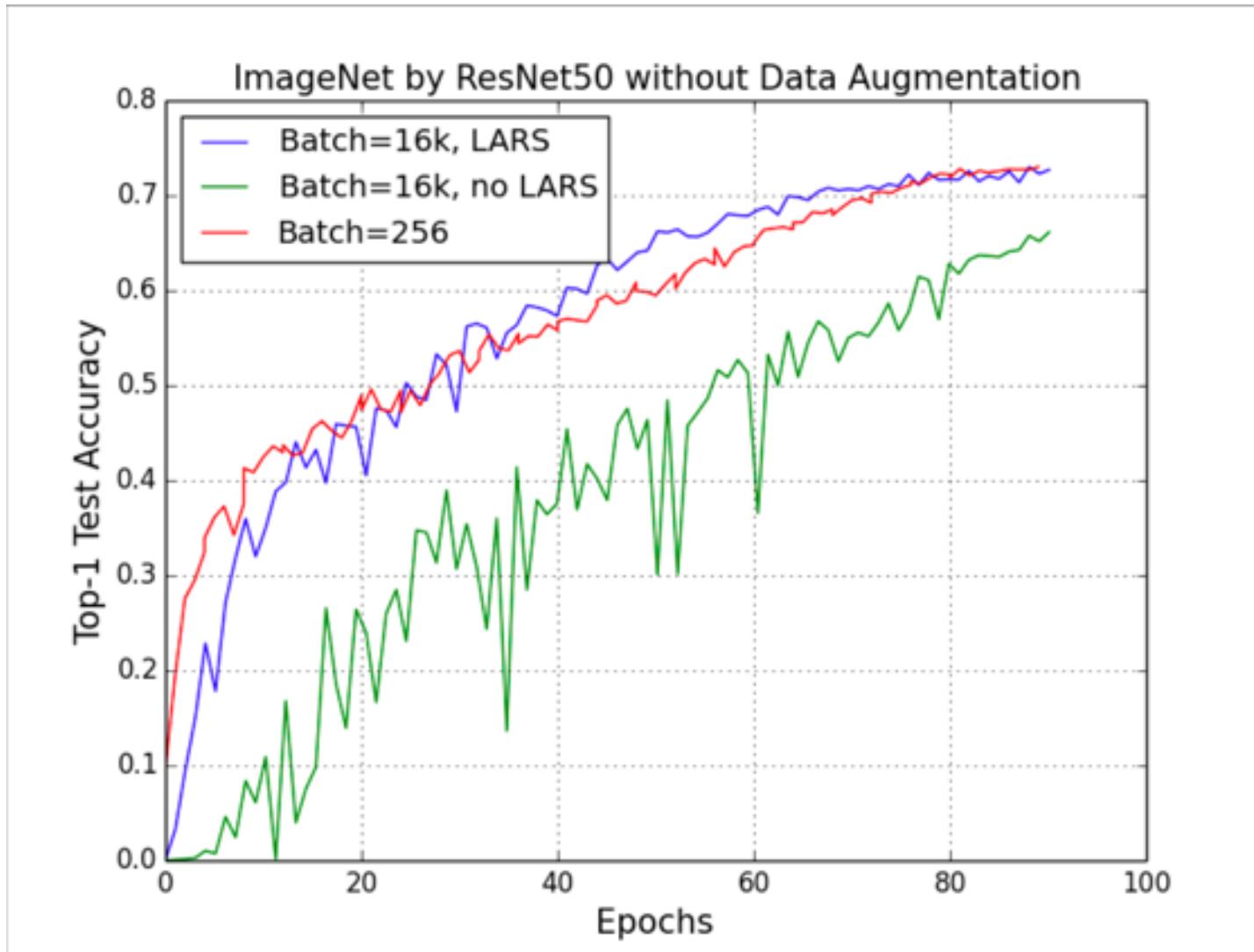
End to End Pipeline : **TRAIN MODEL**

“Build your own baseline”

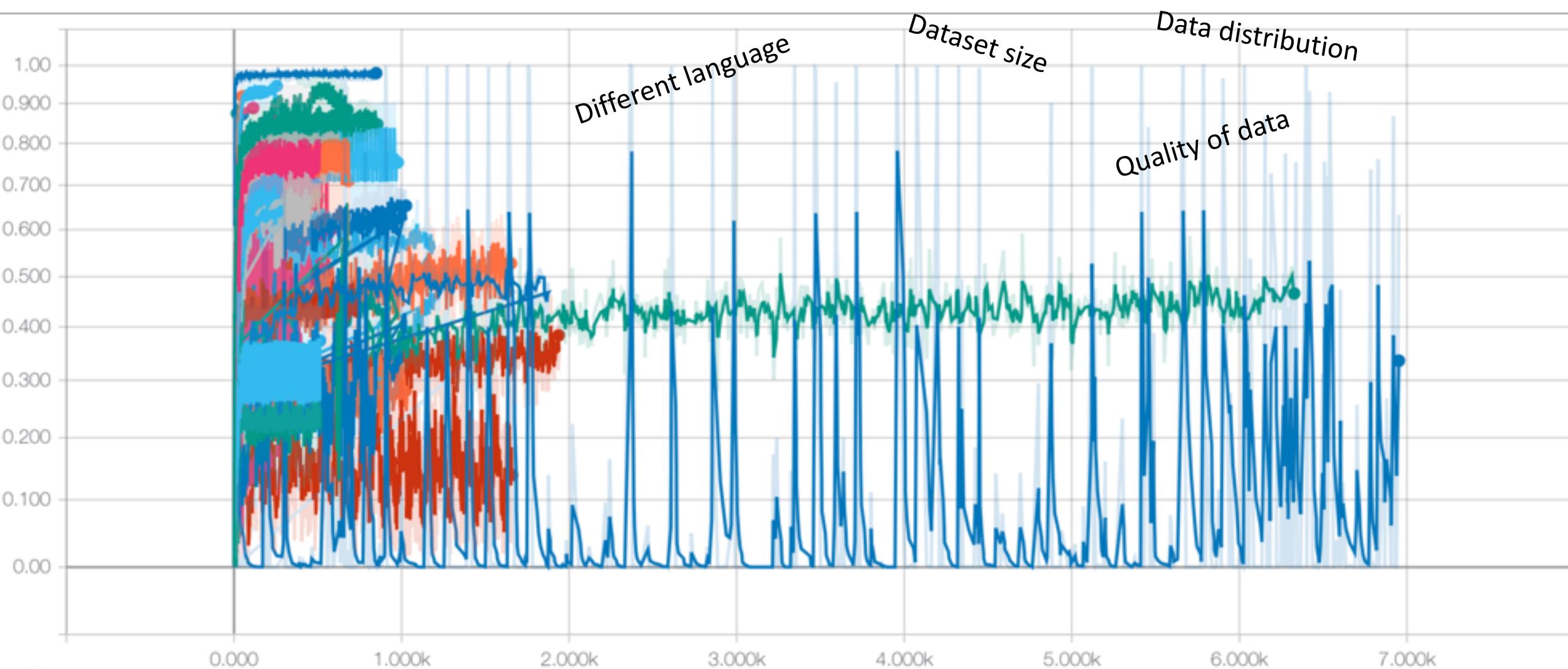


Source: <http://bit.ly/PlotNeurons>

End to End Pipeline : **TRAIN MODEL**

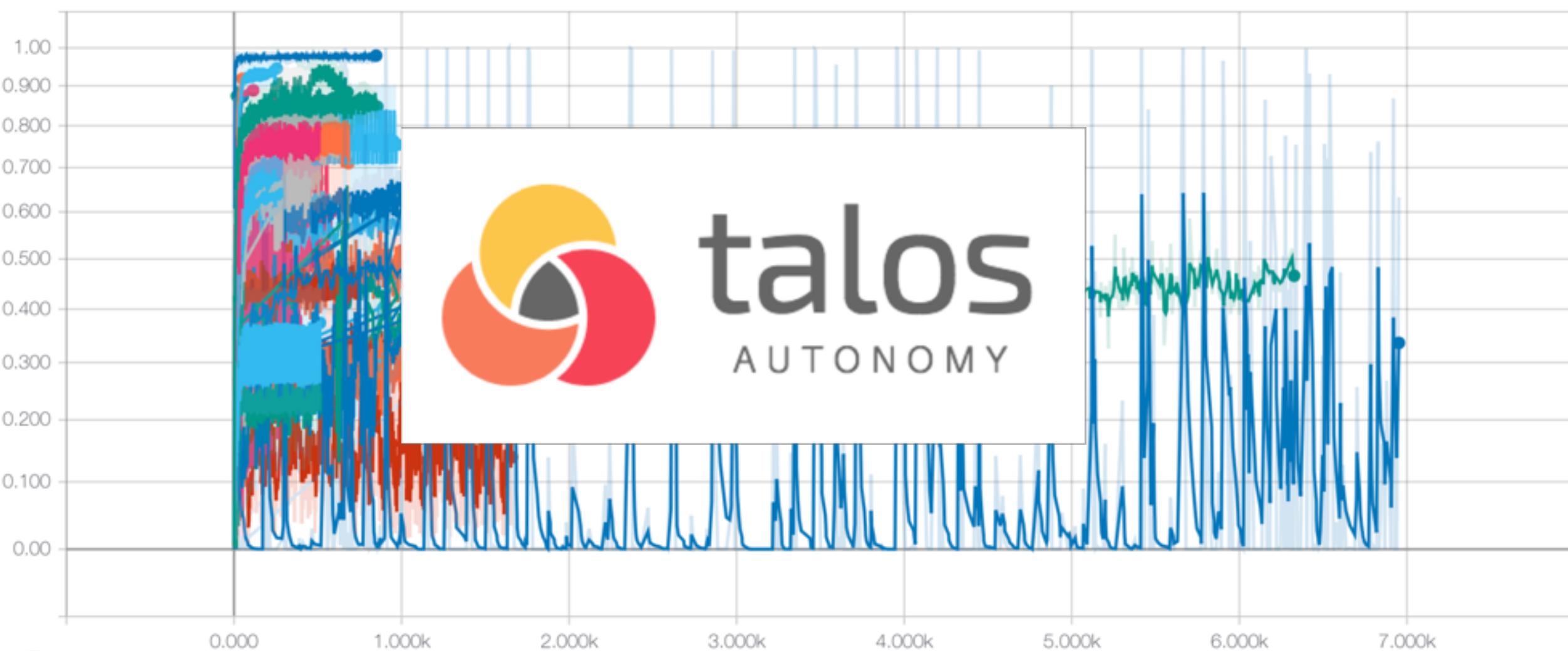


End to End Pipeline : **TRAIN MODEL**



End to End Pipeline : **TRAIN MODEL**

Hyperparameter optimization



End to End Pipeline : **TRAIN MODEL**

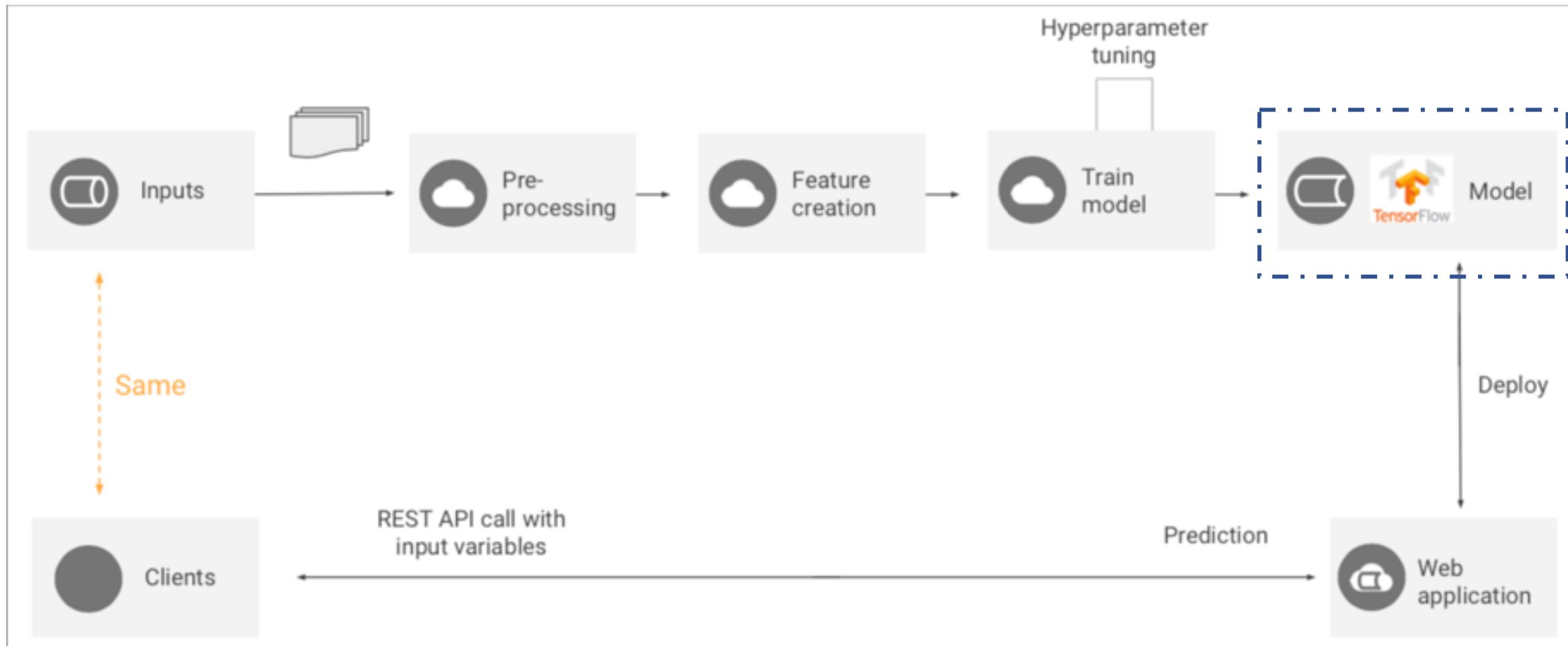
Hyperparameter optimization



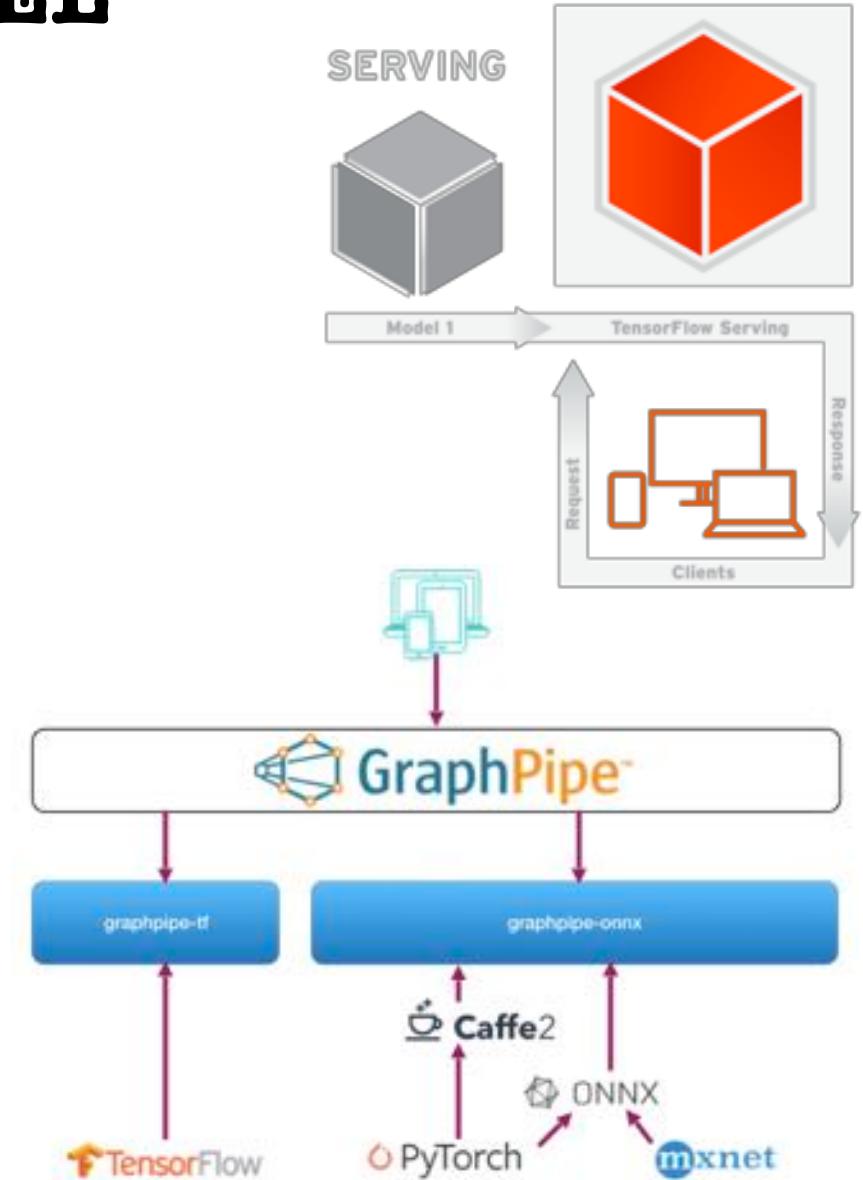
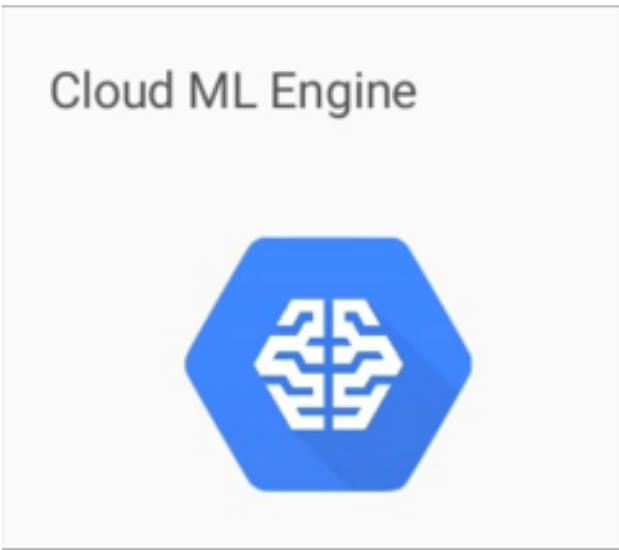
Colab link: <http://bit.ly/talosHPO>

round_epochs		loss	acc	first_neuron	activation	batch_size
1	100	0.4734066925011575	0.7916666630189866	48	<function elu at 0x7fa51833a268>	10
2	100	10.379157334566116	0.3489583383003871	12	<function relu at 0x7fa51833a488>	20
3	100	0.6171546266414225	0.683593756519258	12	<function relu at 0x7fa51833a488>	30
4	100	0.5872933422215283	0.744791672565043	24	<function relu at 0x7fa51833a488>	30
5	100	5.6245436910539865	0.6510416749709597	24	<function elu at 0x7fa51833a268>	10
6	100	0.5272156484425068	0.7552083330228925	48	<function relu at 0x7fa51833a488>	20
7	100	0.5109345514792949	0.7695312490686774	48	<function relu at 0x7fa51833a488>	30
8	100	0.47646385493377846	0.7773437485254059	12	<function elu at 0x7fa51833a268>	10
9	100	0.4572998268995434	0.7851562523283064	48	<function elu at 0x7fa51833a268>	30
10	100	0.49520680168643594	0.7734374993791183	12	<function elu at 0x7fa51833a268>	20
11	100	0.4905776670202613	0.7903645788319409	24	<function elu at 0x7fa51833a268>	30
12	100	0.514674260125806	0.7708333345750967	24	<function elu at 0x7fa51833a268>	20
13	100	5.624543756246567	0.6510416745829085	24	<function relu at 0x7fa51833a488>	20
14	100	0.527019191494522	0.7773437468179812	48	<function relu at 0x7fa51833a488>	10
15	100	0.555716585018672	0.7473958338766048	12	<function relu at 0x7fa51833a488>	10
16	100	10.317635461688042	0.3528645939659327	12	<function elu at 0x7fa51833a268>	30
17	100	0.5219061014940962	0.7643229172875484	24	<function relu at 0x7fa51833a488>	10
18	100	0.46097196203966934	0.7929687509313226	48	<function elu at 0x7fa51833a268>	20

End to End Pipeline



End to End Pipeline : **DEPLOY MODEL**



End to End Pipeline : **DEPLOY MODEL**

Post training optimizations

- **Freezing:** That is, converting the variables stored in a checkpoint file of the SavedModel into constants stored directly in the model graph.

```
def freeze_graph(saved_model_dir):  
  
    from tensorflow.python.tools import freeze_graph  
    from tensorflow.python.saved_model import tag_constants  
  
    output_graph_filename = os.path.join(saved_model_dir, "frozen_model.pb")  
    output_node_names = "head/predictions/ExpandDims"  
    initializer_nodes = ""  
  
    freeze_graph.freeze_graph(  
        input_saved_model_dir=saved_model_dir,  
        output_graph=output_graph_filename,  
        saved_model_tags = tag_constants.SERVING,  
        output_node_names=output_node_names,  
        initializer_nodes=initializer_nodes,  
  
        input_graph=None,  
        input_saver=False,  
        input_binary=False,  
        input_checkpoint=None,  
        restore_op_name=None,  
        filename_tensor_name=None,  
        clear_devices=False,  
        input_meta_graph=False,  
    )  
  
    print "SavedModel graph freezed!"
```

‘Shrinking model size (to have less memory and disk footprints), and improving prediction latency.’

End to End Pipeline : **DEPLOY MODEL**

Post training optimizations

- **Quantisation:** That is, converting any large float Const op into an eight-bit equivalent, followed by a float conversion op so that the result is usable by subsequent nodes.

```
● ● ●

from tensorflow.tools.graph_transforms import TransformGraph

transforms = [ "remove_nodes(op=Identity)",
              "fold_constants(ignore_errors=true)",
              "fold_batch_norms",
              "fuse_resize_pad_and_conv",
              "quantize_weights",
              "quantize_nodes",
              "merge_duplicate_nodes",
              "strip_unused_nodes"
            ]

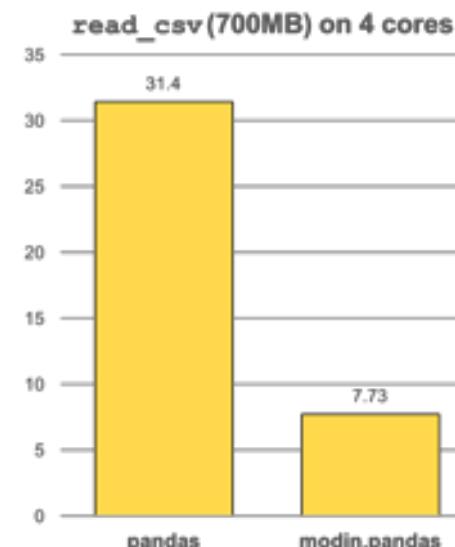
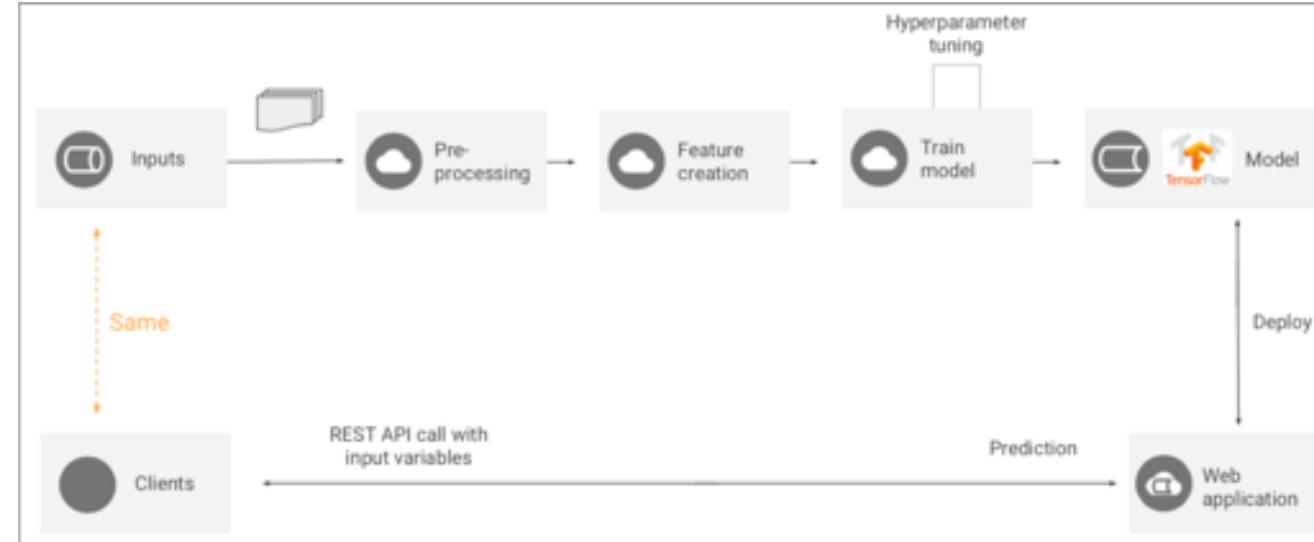
optimised_graph_def = TransformGraph(graph_def, input_names, output_names, transforms )
```

‘**Shrinking** model size (to have less memory and disk footprints), and **improving** prediction latency.’

End to End Pipeline

Must to have:

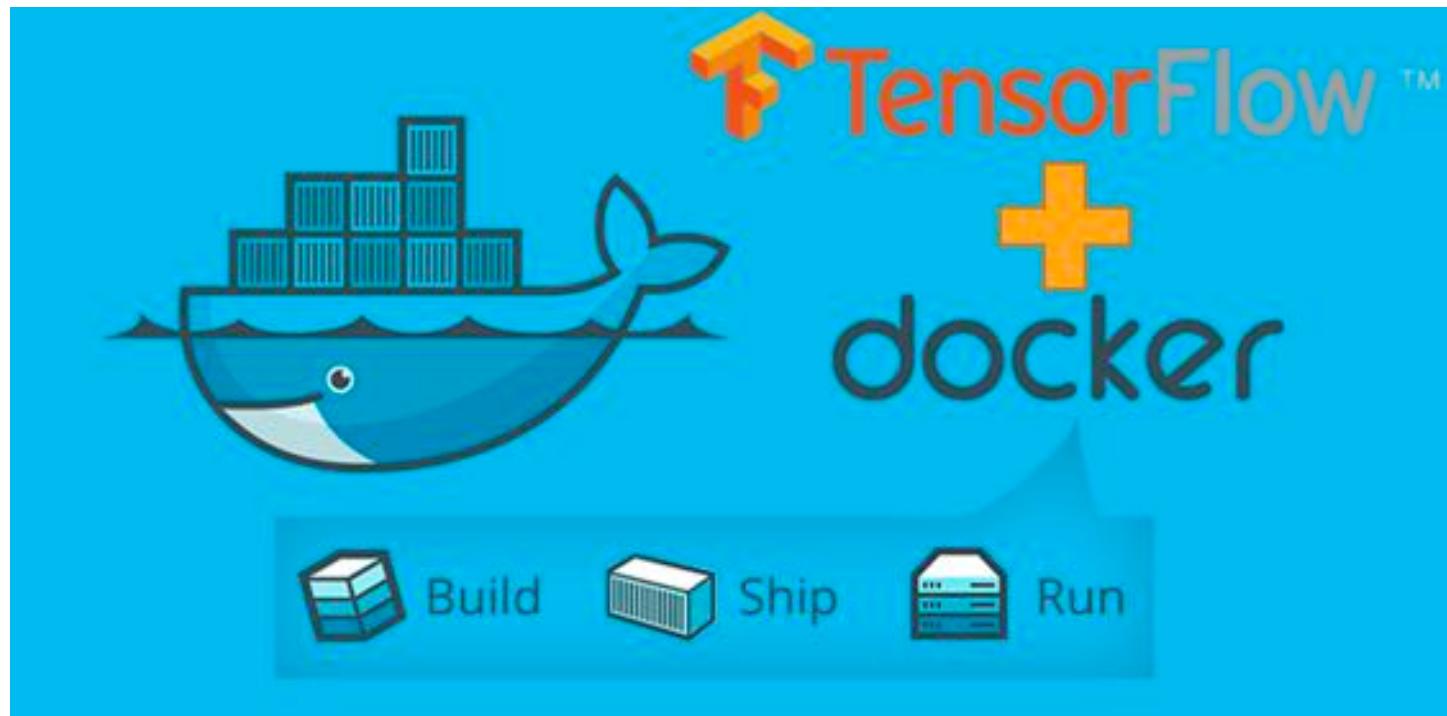
- Micro-service architecture
- Optimize each modules
- Real-time monitoring
- Complete RESTful mode



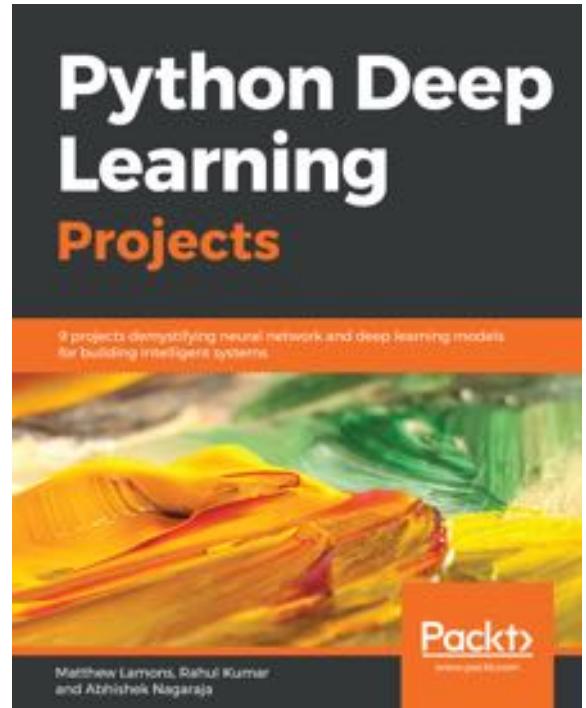
mlflow™

Let's Deploy

Code : <https://github.com/goodrahstar/tf-sentiment-docker>



Thank you



Book : <https://www.amazon.com/dp/1788997093>

Code : <http://bit.ly/DeepLearningCode>

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