Google Cloud

Summary

Summary

Working with sequences

Recurrent Neural Networks (RNNs)

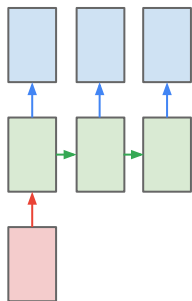Dealing with longer sequences (LSTMs)

Reusable embeddings

Encoder-decoder models
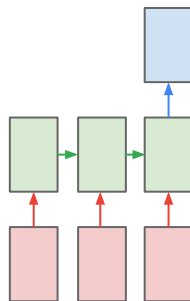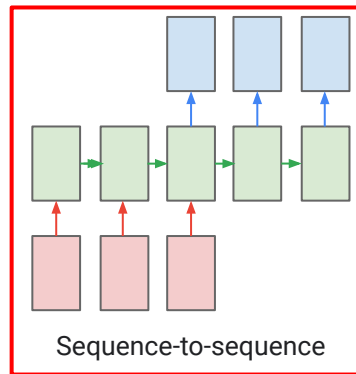
Sequences are another common and important domain

What sort of problem is translation?
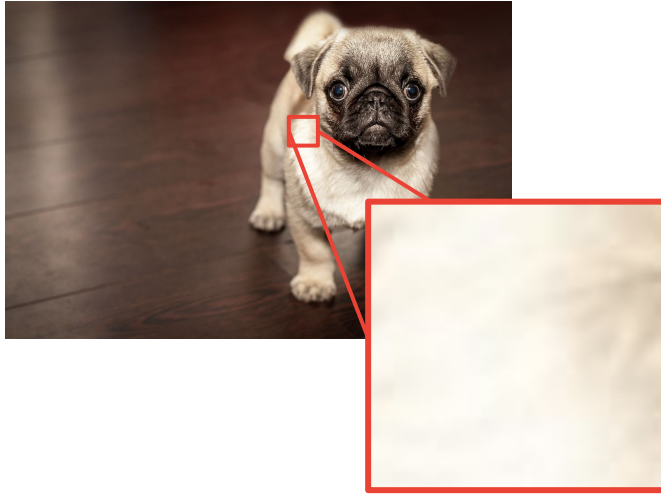

One-to-sequence   Sequence-to-one   Sequence-to-sequence

Locality is important for images and sequences

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Two key ideas for RNNs

1 RNNs learn a compact hidden state that represents the past.

2 The input to an RNN is a concatenation of the original, stateless input and the hidden state.
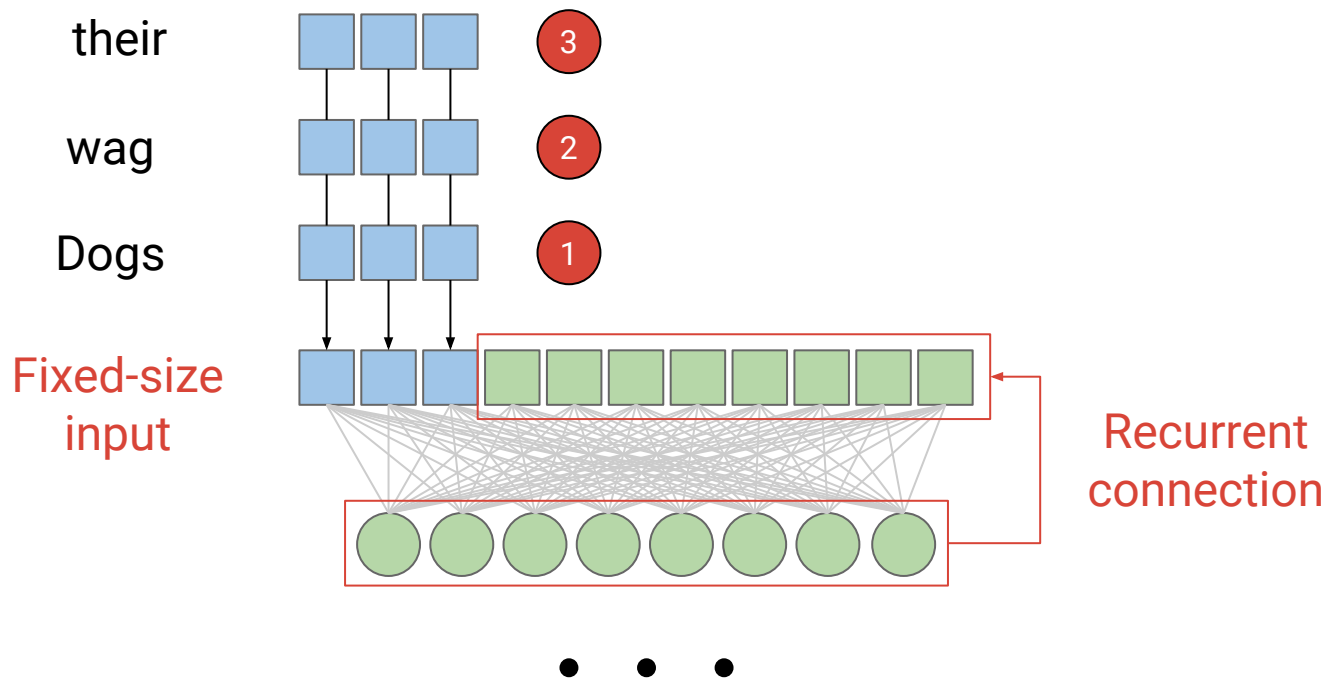
How RNNs remember the past

1 Recurrent connection

2 Clever optimization

The recurrent connection
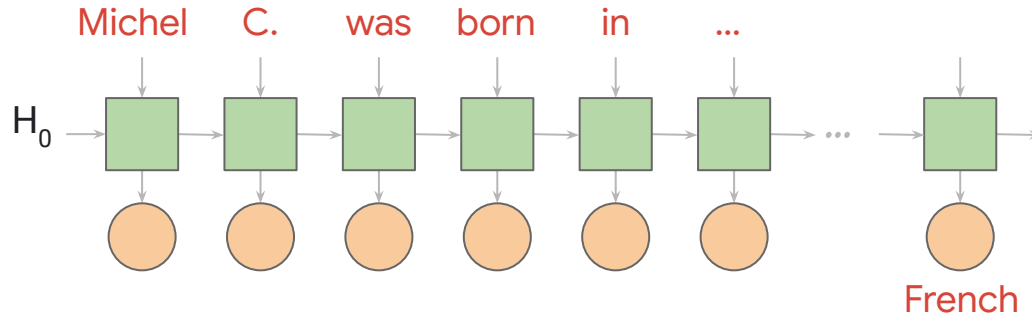
their

wag

Dogs

3

2

1

Fixed-size input

Recurrent connection

Problem with RNNs: Long term dependencies

"Michel C. was born in Paris, France. His mother tongue is **? ? ? ?"**

T = max sequence length

Summary

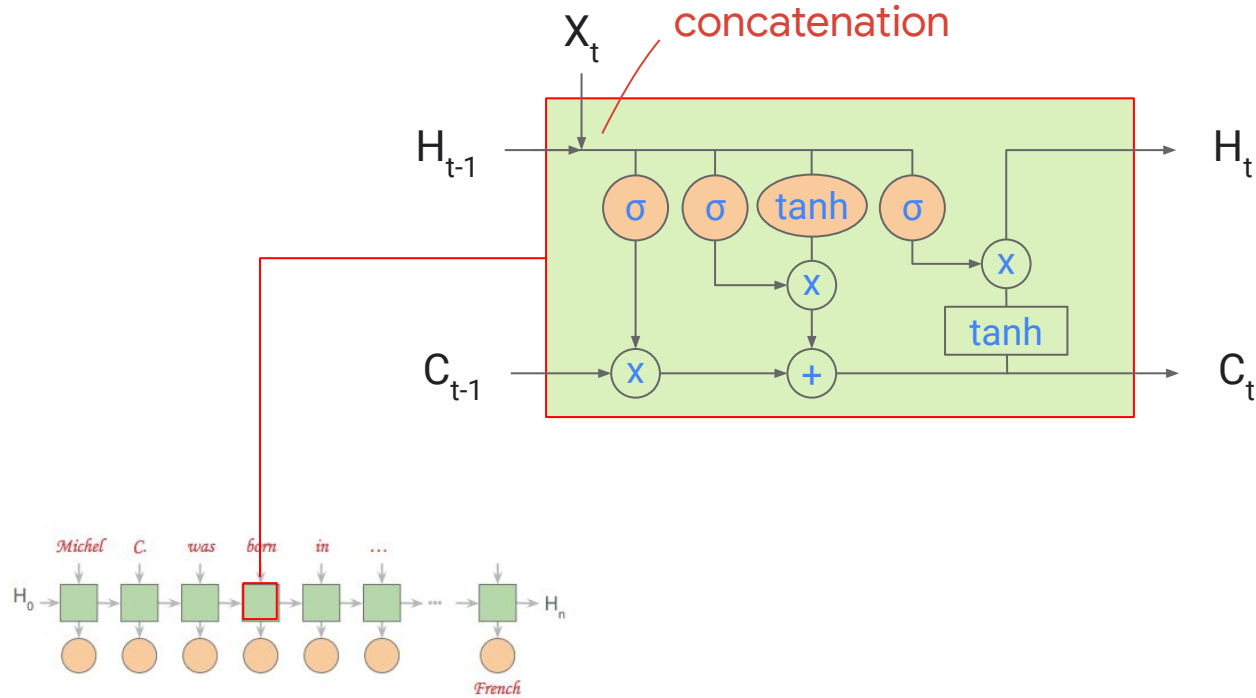Working with sequences

Recurrent Neural Networks (RNNs)

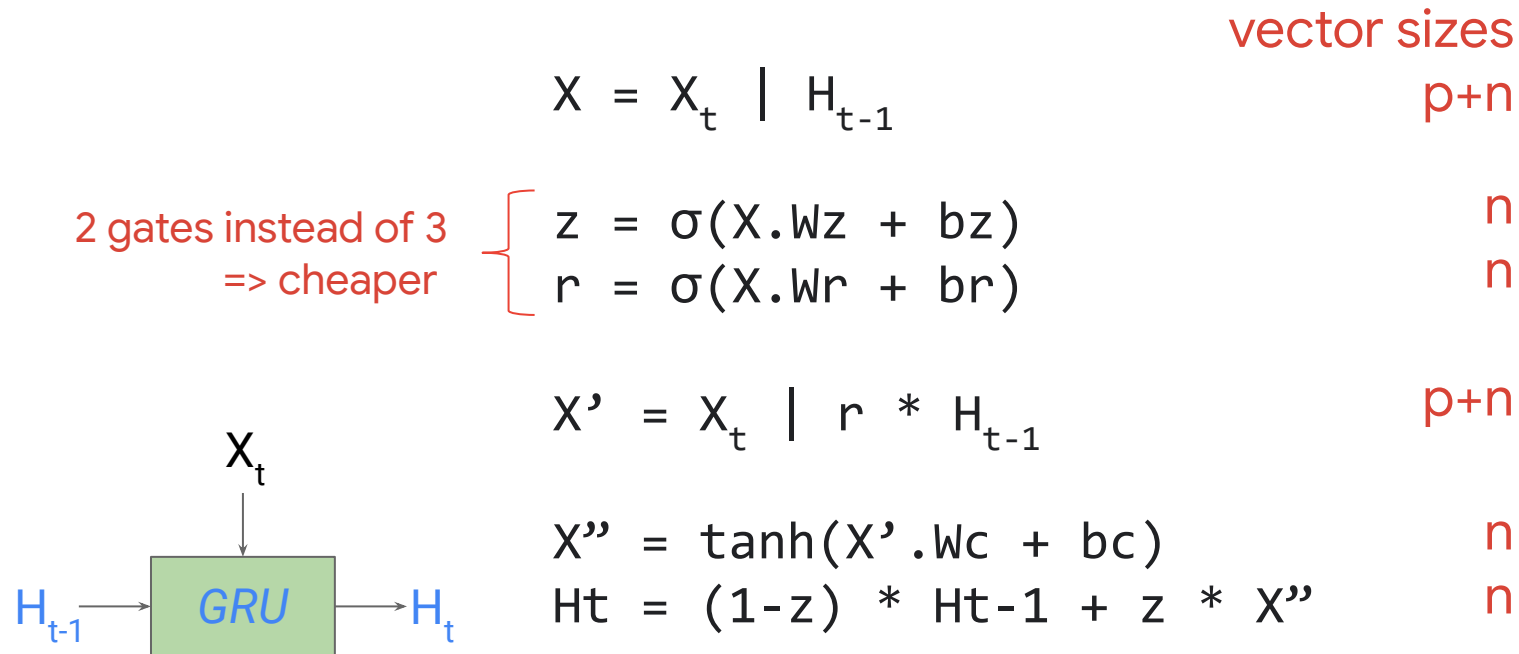**Dealing with longer sequences (LSTMs)**

Reusable embeddings

Encoder-decoder models

LSTM cell

Gated Recurrent Unit (GRU)

vector sizes

$$X = X_t \mid H_{t-1}$$

p+n

2 gates instead of 3
=> cheaper

$$z = \sigma(X.Wz + bz)$$

n

$$r = \sigma(X.Wr + br)$$

n

$$X' = X_t \mid r * H_{t-1}$$

p+n

X_t

$$X'' = tanh(X'.Wc + bc)$$

n

H_{t-1} → **GRU** → H_t

$$Ht = (1-z) * Ht-1 + z * X''$$

n

Summary

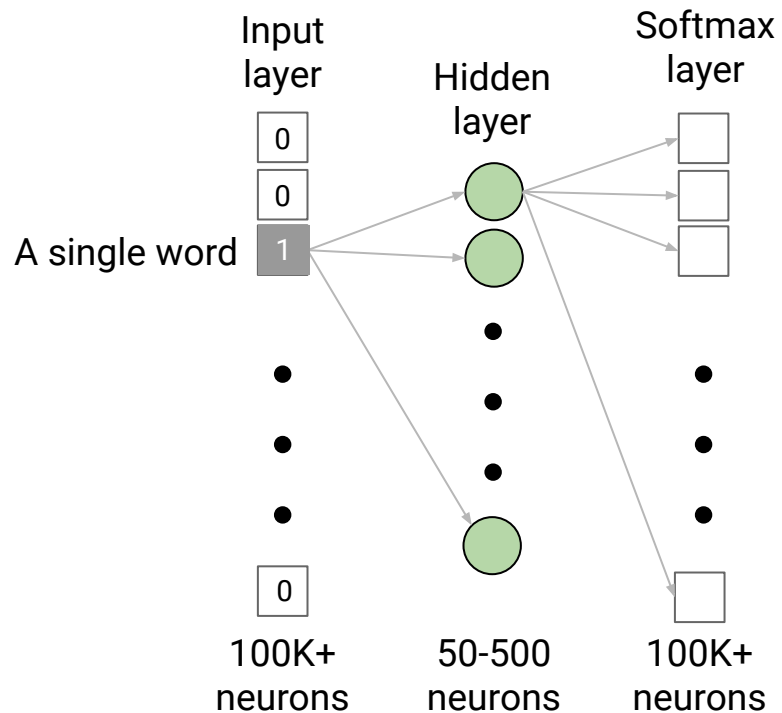Working with sequences

Recurrent Neural Networks (RNNs)

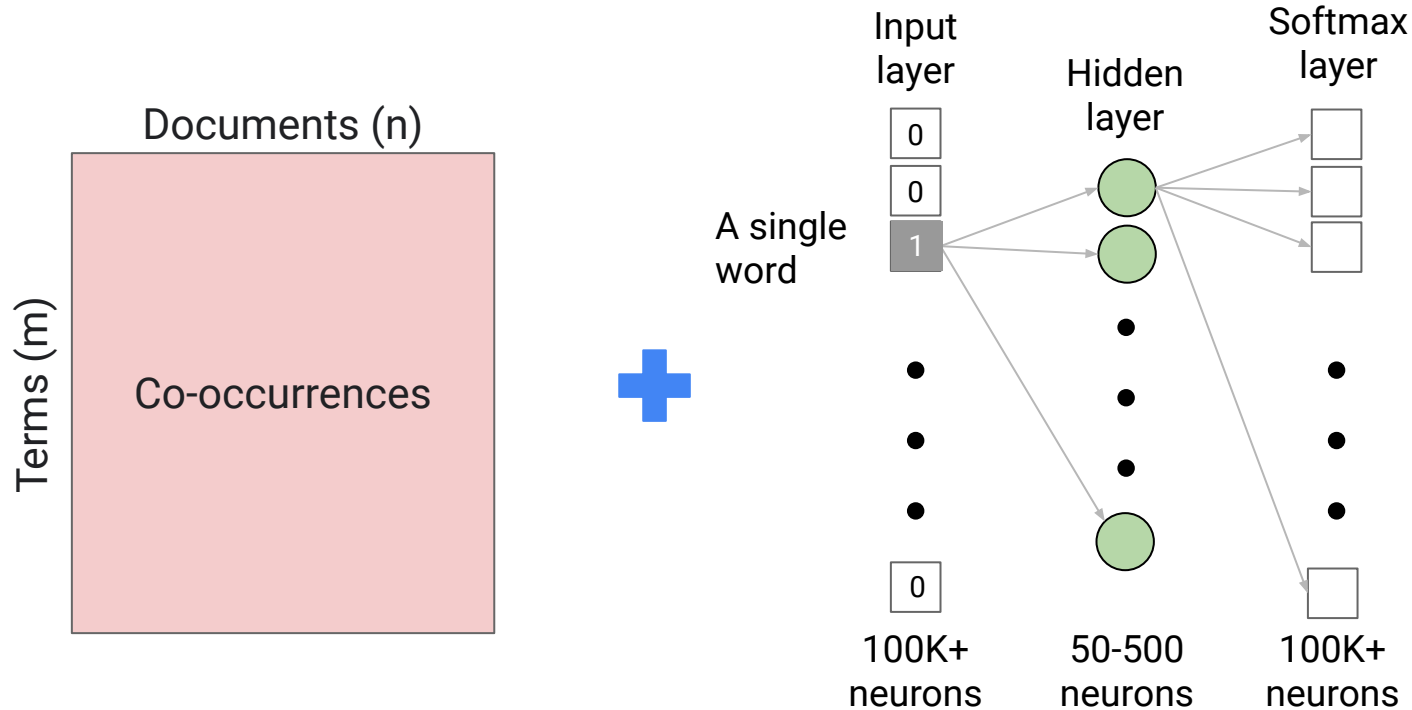Dealing with longer sequences (LSTMs)

Reusable embeddings

Encoder-decoder models

Word2Vec's network architecture

GloVe is a hybrid between matrix factorization and window-based methods

TensorFlow Hub makes using pre-trained embeddings easy

Introducing TensorFlow

READ ON TENSORFLOW BLOG

TensorFlow hub

#TFDevSummit

TensorFlow Hub at the Dev Summit

WATCH THE VIDEO

Simply pull from a library of pre-trained embeddings.

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Recurrent Neural Networks (RNNs)

Dealing with longer sequences (LSTMs)
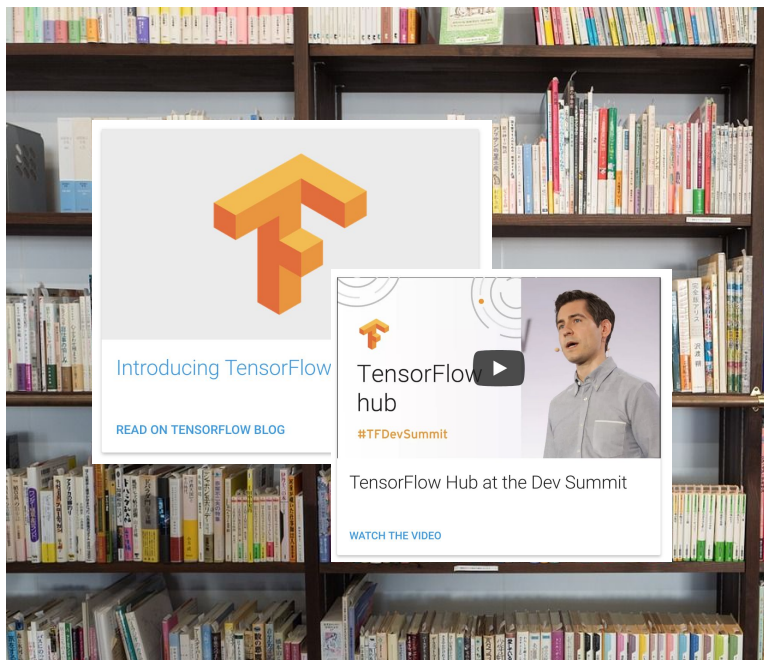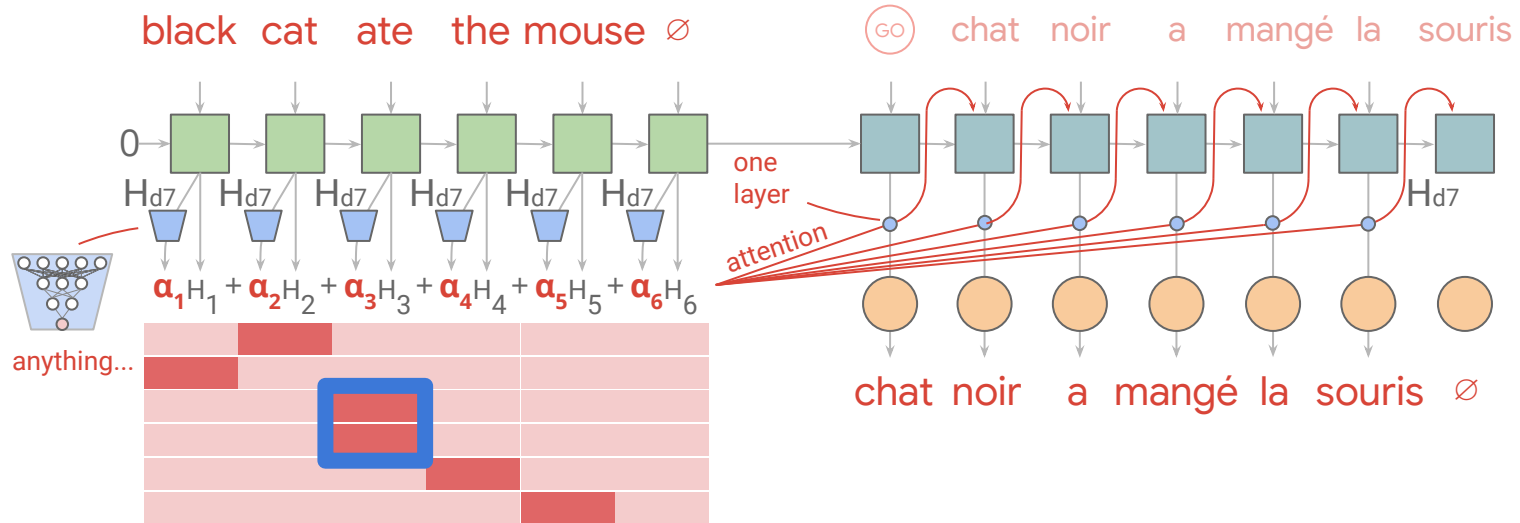
Reusable embeddings

Encoder-decoder models
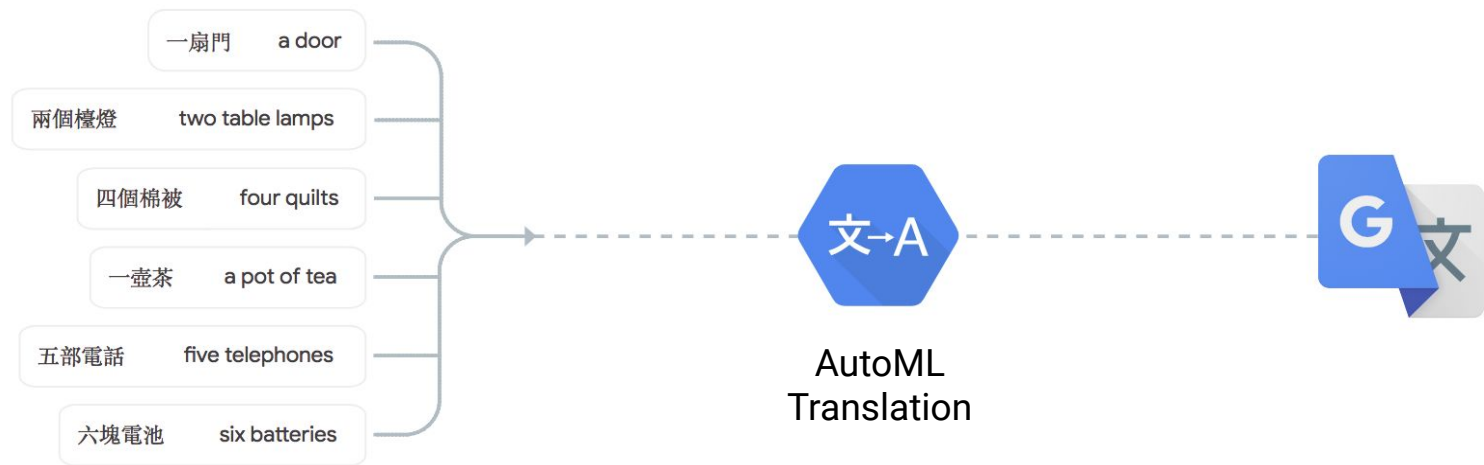
Improve the translation with attention network

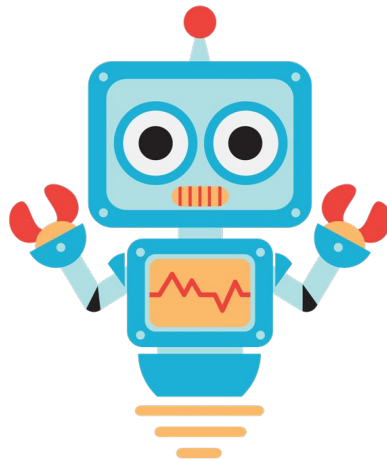# How AutoML Translation^{BETA} works?
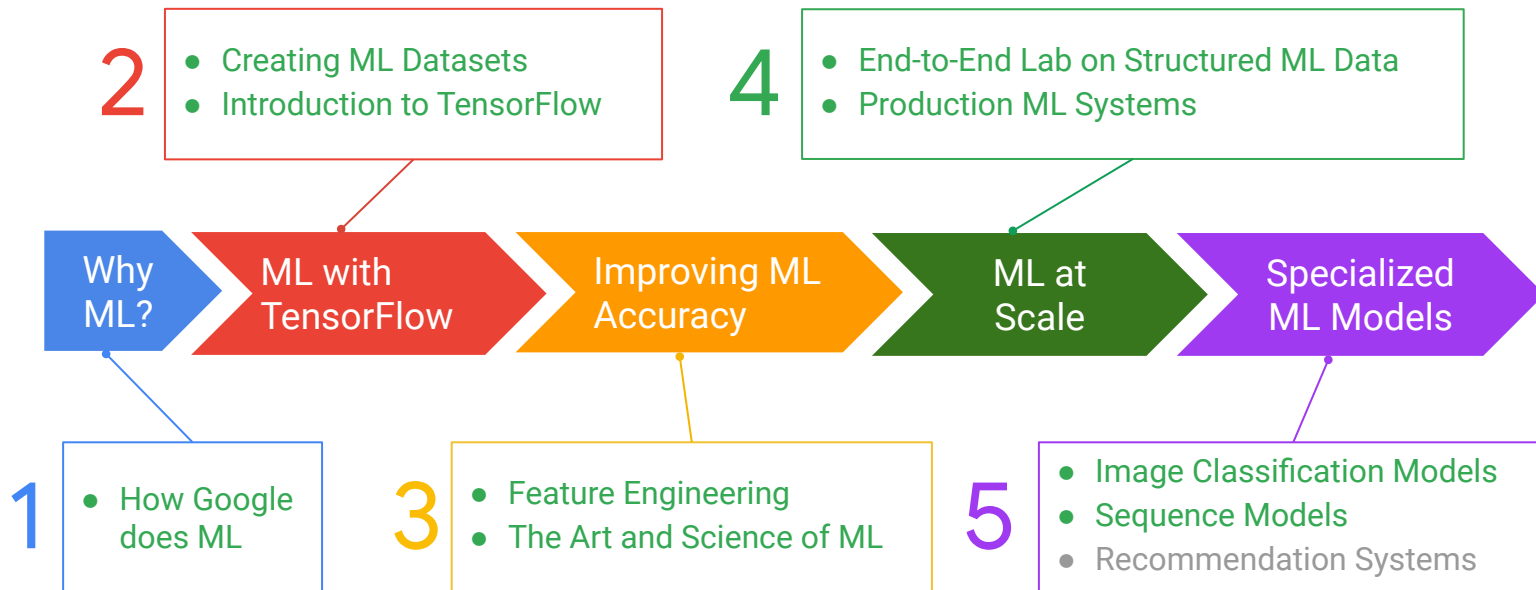
Natural language conversations

Dialogflow

An end-to-end developer platform for building natural and rich conversational experiences.

Machine learning on Google Cloud Platform

2
- Creating ML Datasets
- Introduction to TensorFlow

4
- End-to-End Lab on Structured ML Data
- Production ML Systems

Why ML?	ML with TensorFlow	Improving ML Accuracy	ML at Scale	Specialized ML Models

1
- How Google does ML

3
- Feature Engineering
- The Art and Science of ML

5
- Image Classification Models
- Sequence Models
- Recommendation Systems

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