

Limitation of the paper

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Limitation

- Limitations include the single-institution nature of the data
- Simpler models demonstrated good performance given large quantities of training data.
- Zero-shot learning based on modern large language models also demonstrated good performance on some metrics
- If computational resources are plentiful but labeled training data are limited, large language models can be used for zero- or **few-shot learning** to achieve reasonable performance

Few shot learning

- Support set :sample data are too small to train neural network

Armadillo



Pangolin



Armadillo or Pangolin?

Few shot learning

- Unlike normal supervised learning trained to classify or recognize (tiger or not tiger)
- train model to recognize the similarity and difference between object
- It looks for similarity of the object from training set on unseen data



Few shot learning

Few-Shot Learning

Query:



*Few shot is Learn
to learn
Learn by itself*

Support Set:

Fox



Squirrel



Rabbit



Hamster



Otter



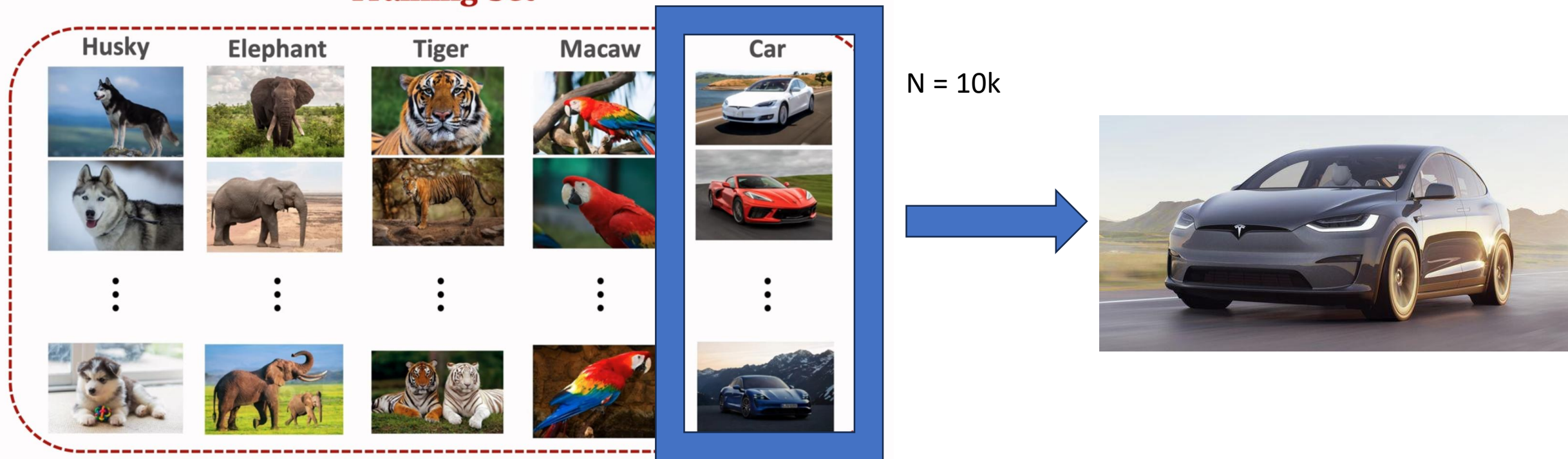
Beaver



Supervised learning vs Few shot learning

- Test data never seen before (data leakage problem)
- Test data belong to the same class as training set

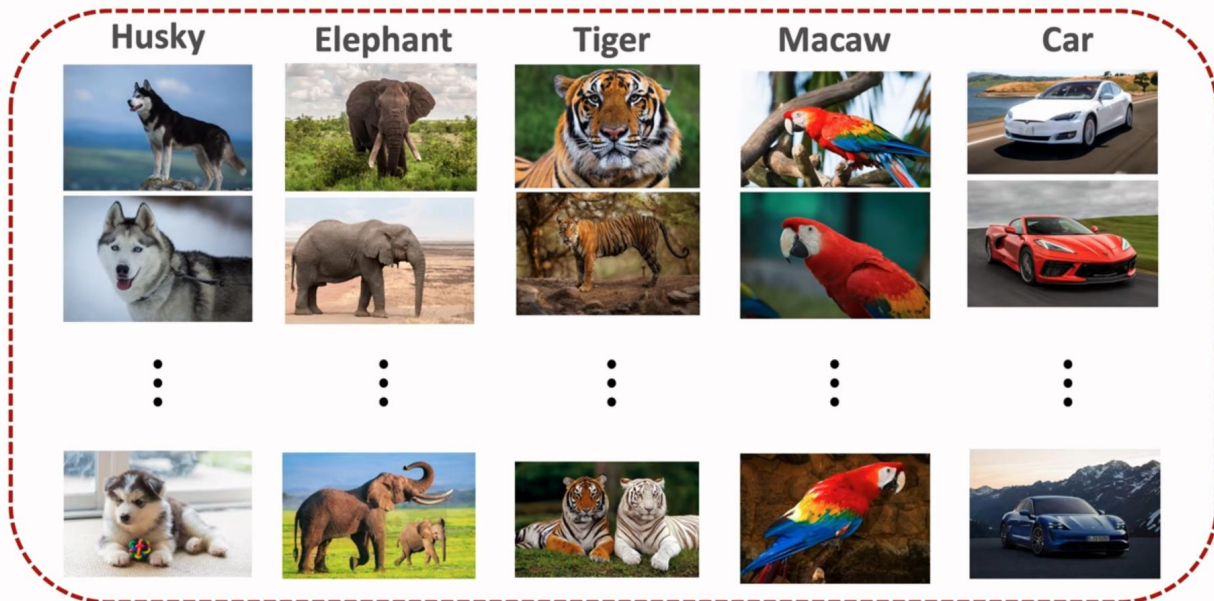
Training Set



Supervised learning vs Few shot learning

- Query never seen in training set before
- Query are from unknown classes

Training Set



Query



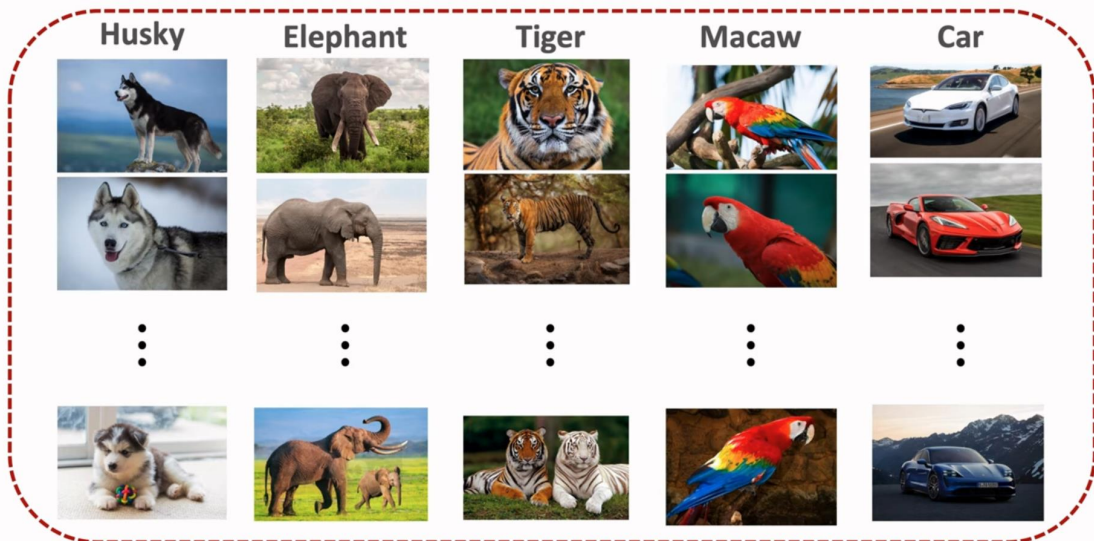
Supervised learning vs Few shot learning

Most Similar !

Support set :



Training Set

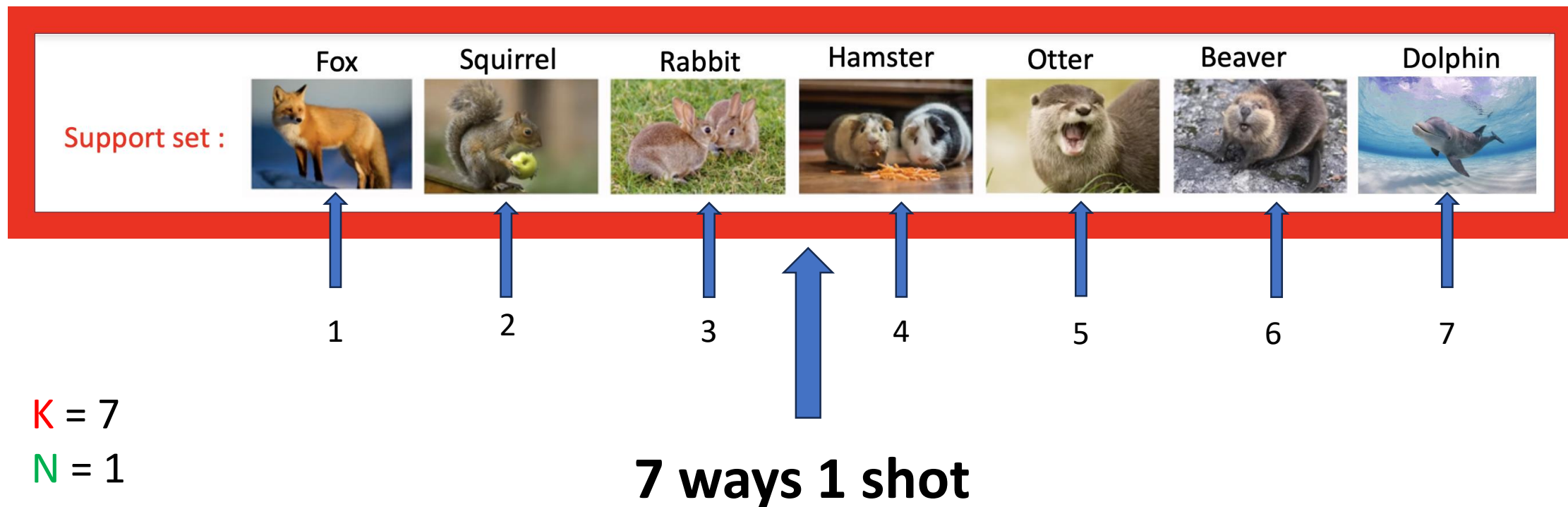


Query

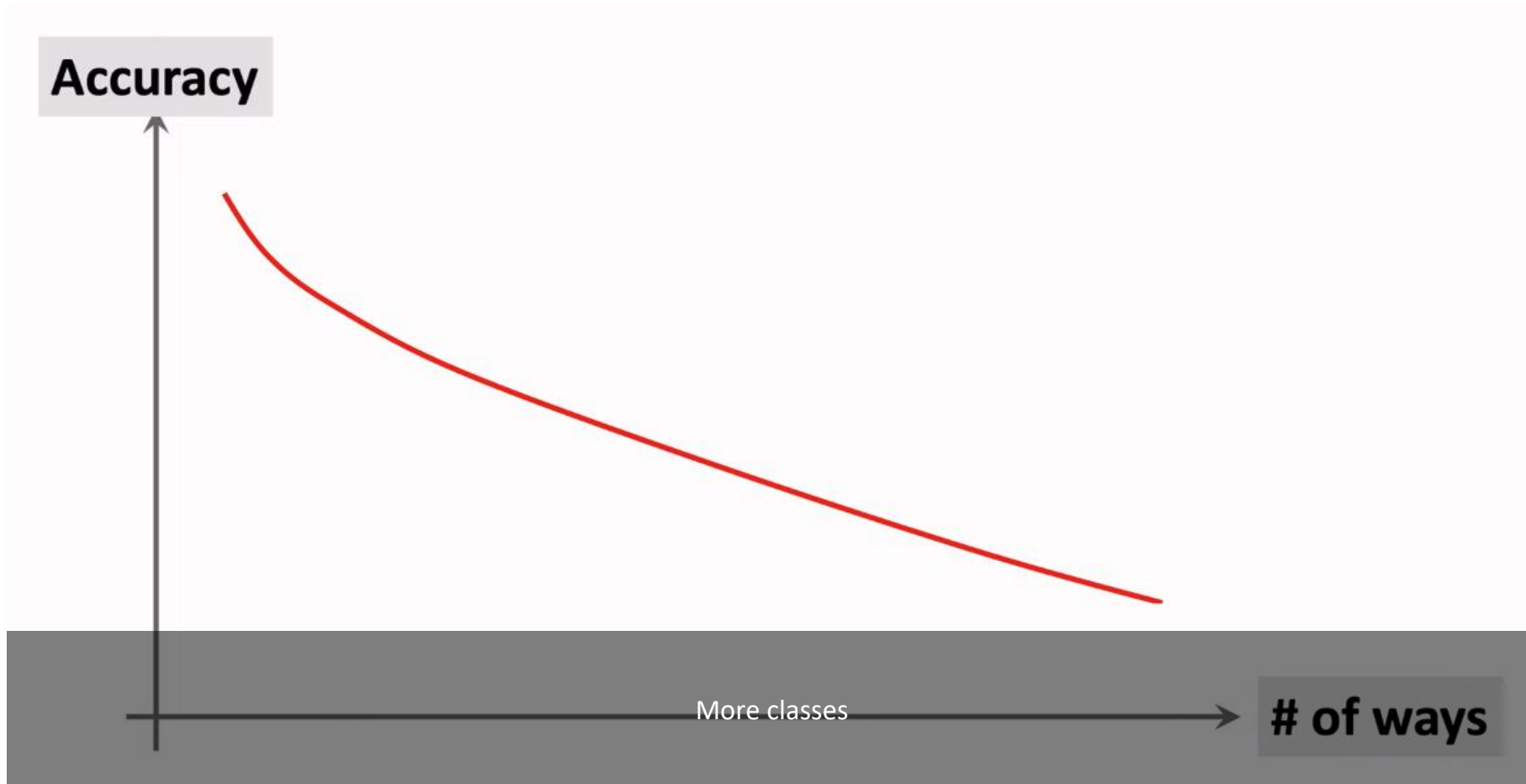


Way and shot

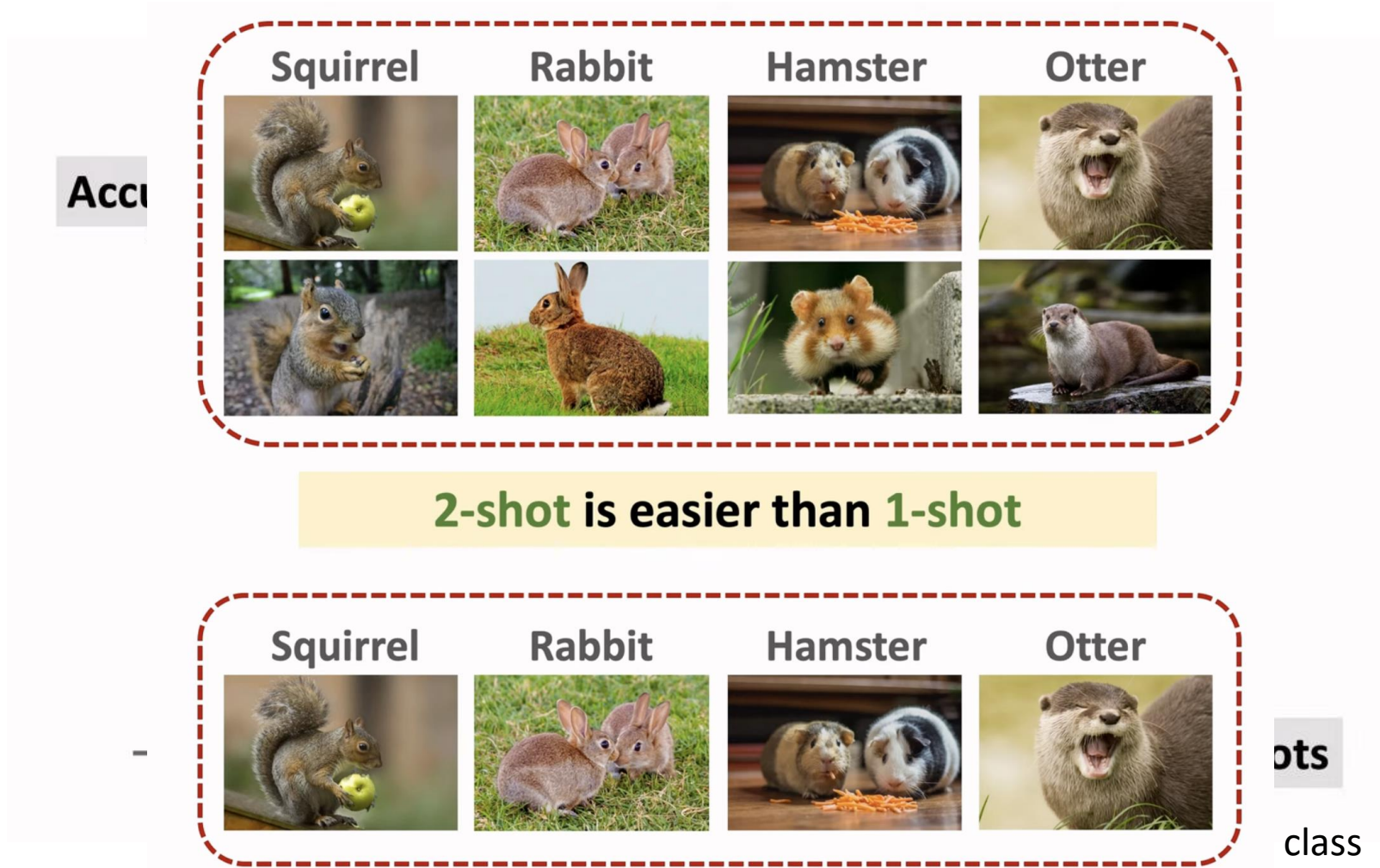
- **K**- way: the number of support set sample class denote as k classes
- **N** – shot: Number of sample per class denote as n samples



Prediction accuracy chart



Prediction chart



Main idea of few
shot : Similarity score

Learn Similarity function : $\text{sim}(X, X')$

Example: $\text{sim}(X1, X2) = 1$ BUT $\text{sim}(X1, X3) = 0$ and $\text{sim}(X2, X3) = 0$

X1



X2

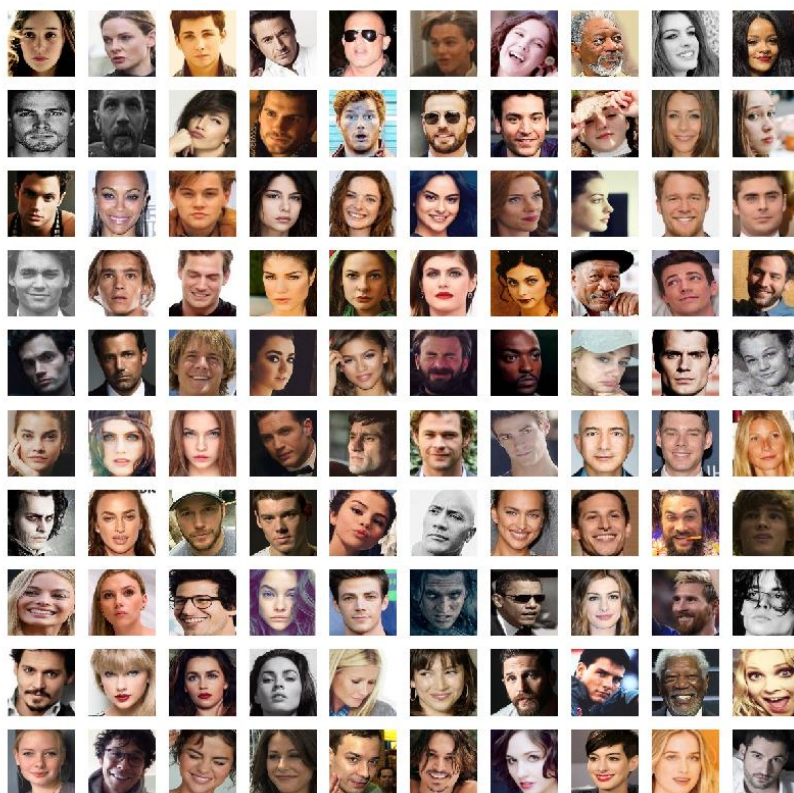


X3

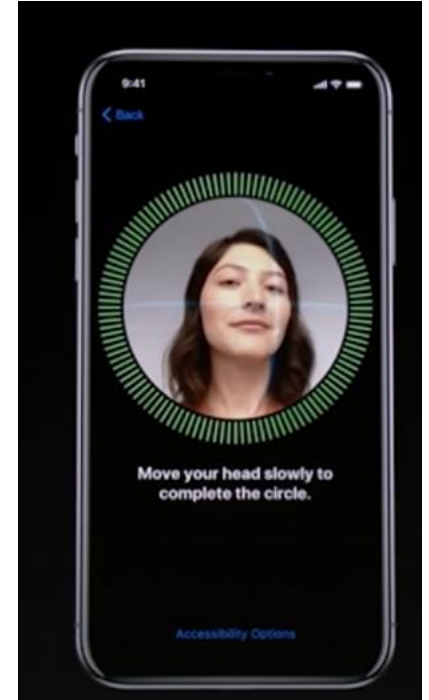
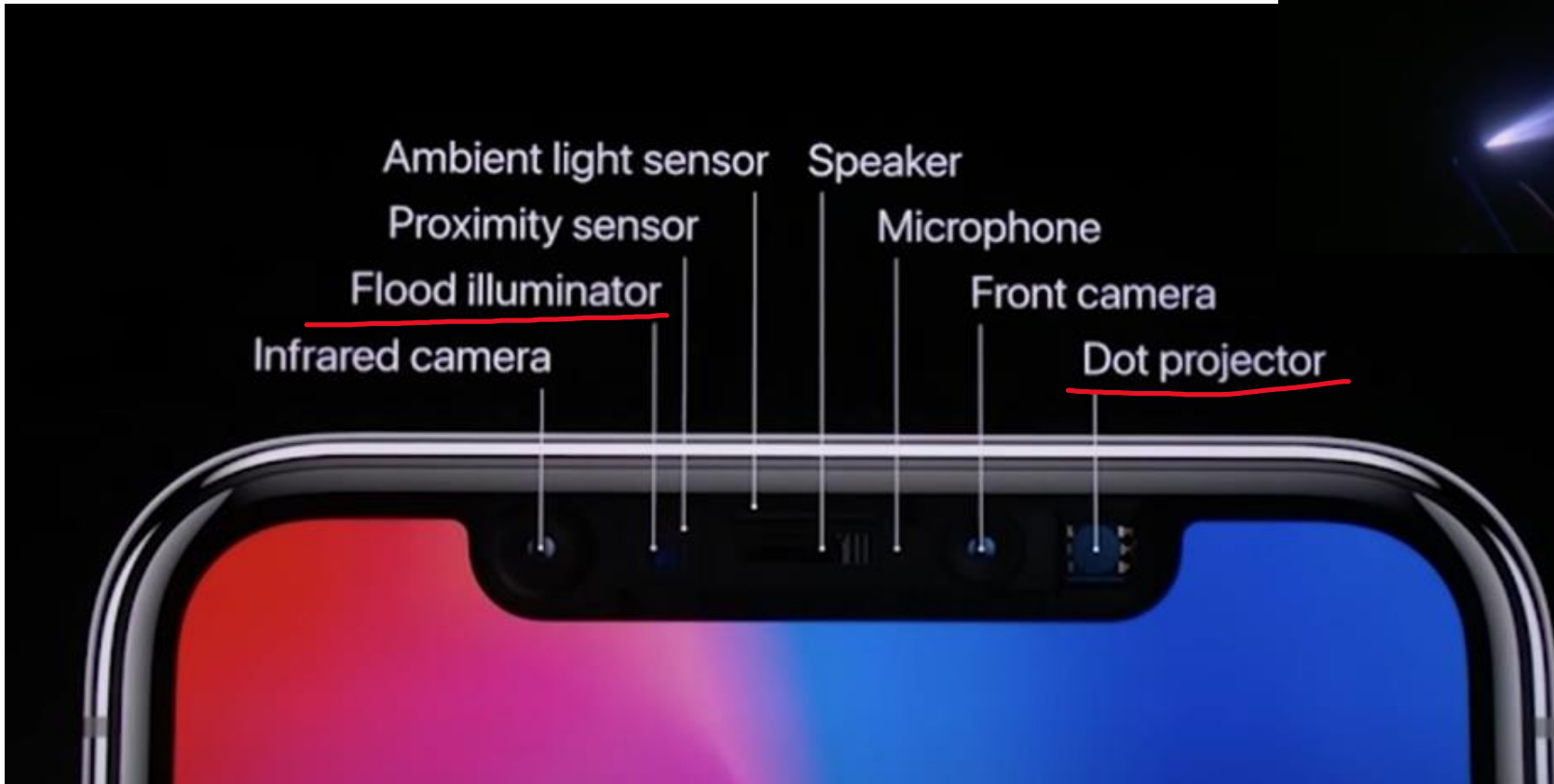
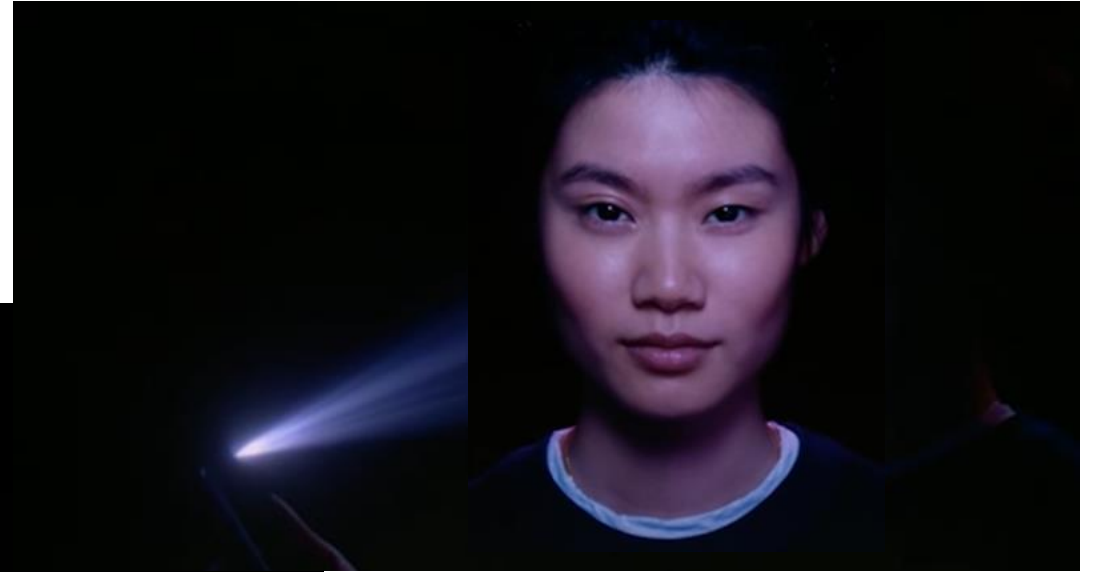


Basic idea FACEID

First learn similiary function large scale training dataset in this case faces



Apple Face ID



Similarity score idea maybe from FACEID



Who is this face belong to?

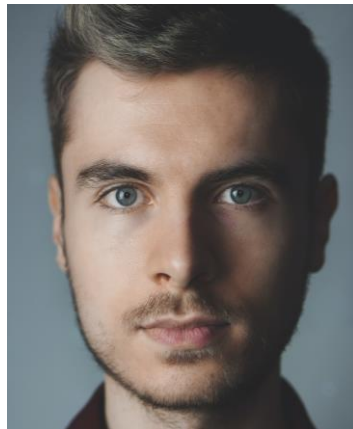
sim = 0.02

Eric



sim = 0.01

Ben



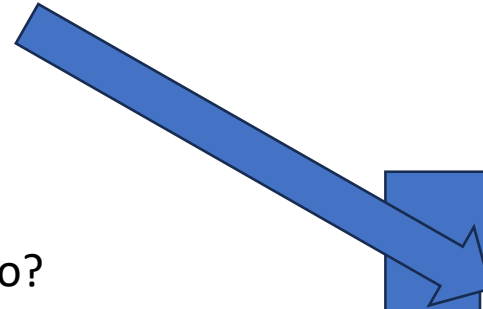
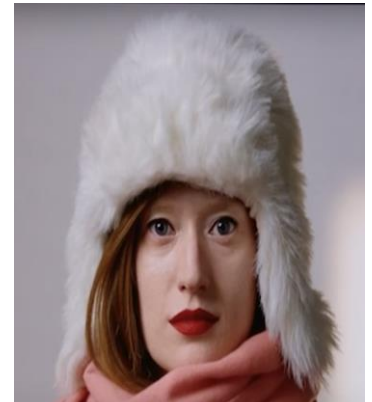
sim = 0.3

Erina



sim = 0.7

Bell



THANK YOU
SO MUCH

YOU ARE VERY MUCH APPRECIATED!