

Information Technologies for Industrial Engineers

เทคโนโลยีสารสนเทศสำหรับวิศวกรอุตสาหกรรม

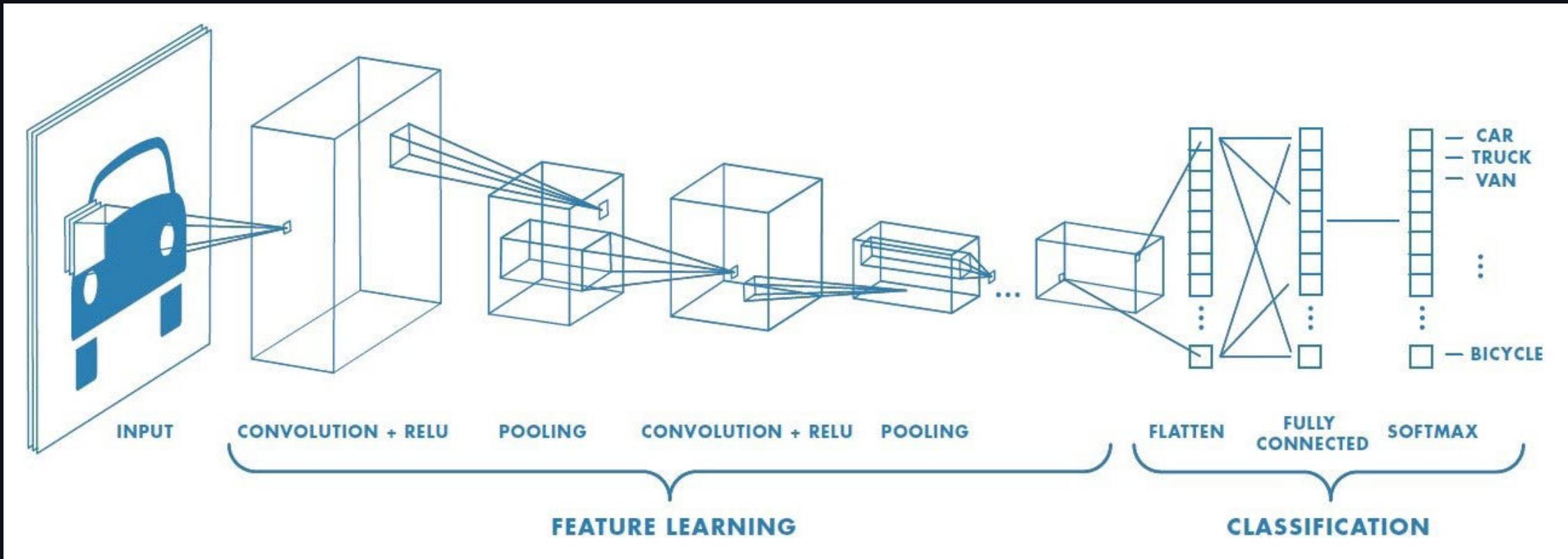
Image Classification Application

Computer vision

- Field of computer science that focuses on enabling computers to identify and understand objects and people in images and videos.
- Computer vision seeks to perform and automate tasks that replicate human capabilities.
 - The way humans see.

Convolutional neural network

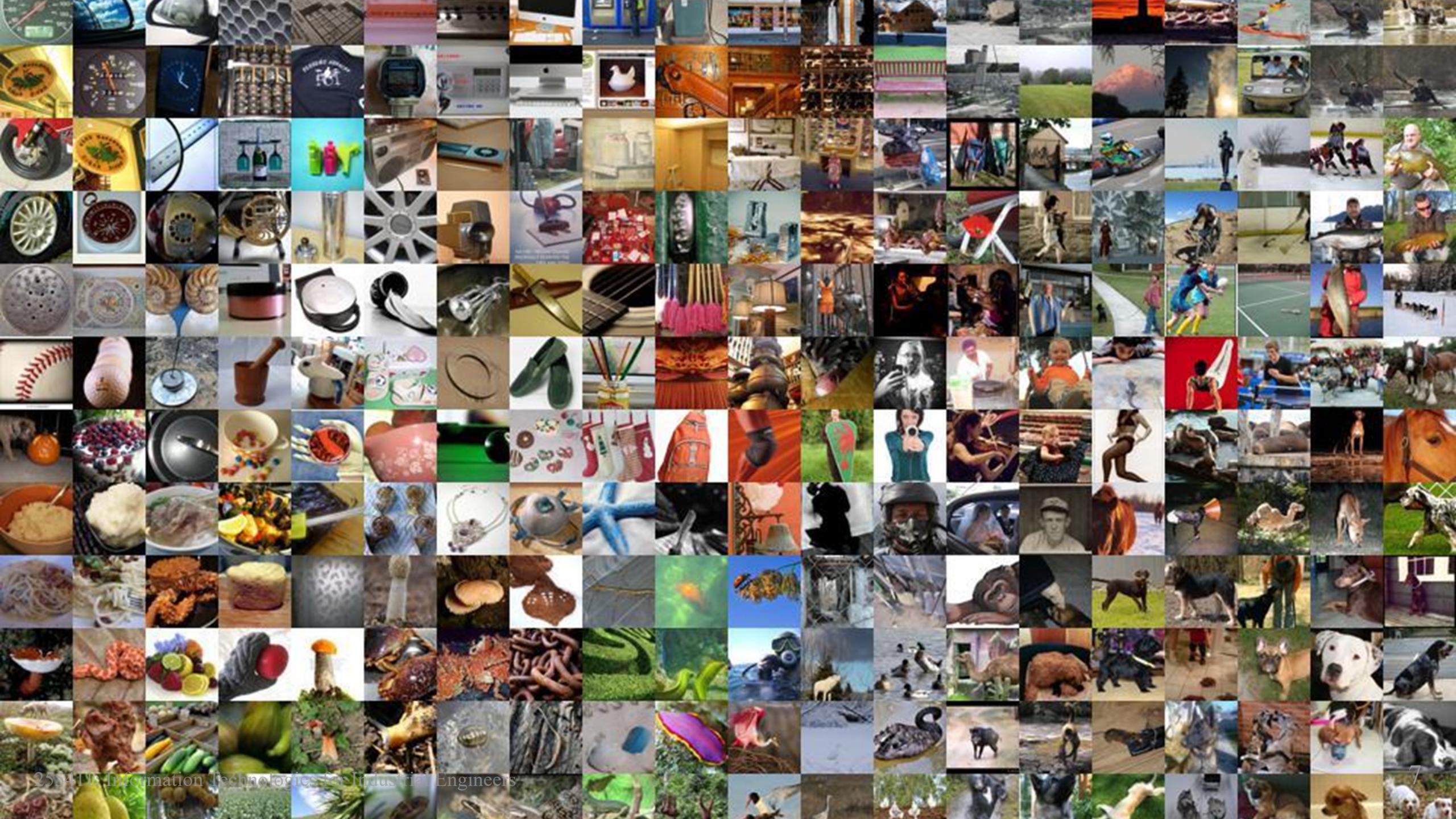
- Deep Learning algorithm that can take in an input image and be able to differentiate one from the other.
- The architecture of a ConvNet is analogous to that of the connectivity pattern of Neurons in the human brain and the visual cortex.



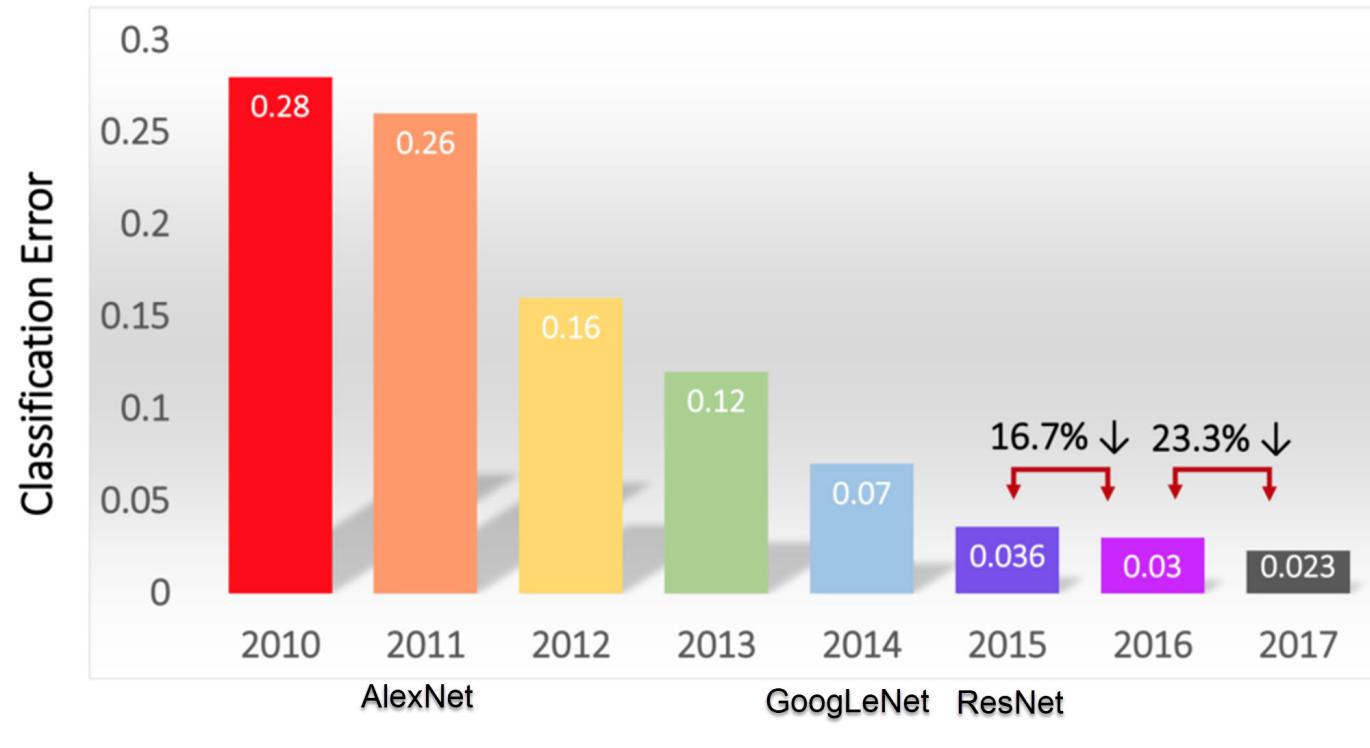
Source

ILSVRC competition

- ImageNet Large Scale Visual Recognition Challenge
 - Started 2010
- Task
 - Evaluates algorithms for object detection and image classification at large scale.
- Data
 - 15 million images
 - 22000 categories



Classification Results (CLS)



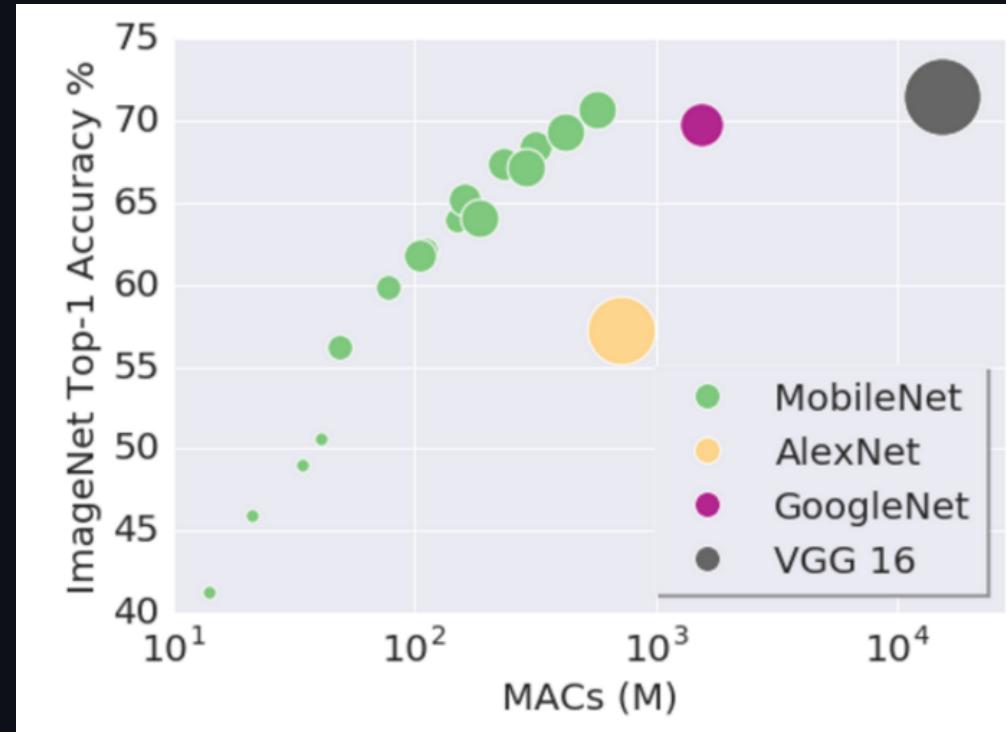
- Y-axis: Top-5 error
- Exceed human ability @ 2015

Current ranking

<https://paperswithcode.com/sota/image-classification-on-imagenet>

MobileNet

- MobileNet is a simple but efficient and not very computationally intensive convolutional neural networks for mobile vision applications
- More info



Let's do it

Install

- `npm create vite@latest`
- ...
- `npm install @tensorflow/tfjs`
- `npm install @tensorflow-models/mobilenet`

```
./src/model.ts
```

```
import * as tf from "@tensorflow/tfjs";
import * as mobilenet from "@tensorflow-models/mobilenet";

export async function get_model() {
  try {
    // Load mobilenet.
    await tf.ready();
    const model = await mobilenet.load({
      version: 1,
      alpha: 1.0,
    });
    return model;
  } catch (err) {
    console.log(err);
    return null;
  }
}
```

```
./src/App.tsx
```

<https://gist.github.com/nnnpooh/03c3ddab0301d111c5629c46d3c00fcf>