

DEEP LEARNING 101

HANDS ON WITH PYTHON AND KERAS

ABOUT ME

- ▶ Software Eng. @ trivago
- ▶ GitHub Campus Expert



WHAT ARE WE GOING TO BUILD?

A convolutional neural network for classifying images



WAIT, WHAT?

1 <small>x1</small>	1 <small>x0</small>	1 <small>x1</small>	0	0
0 <small>x0</small>	1 <small>x1</small>	1 <small>x0</small>	1	0
0 <small>x1</small>	0 <small>x0</small>	1 <small>x1</small>	1	1
0	0	1	1	0
0	1	1	0	0

4		

Convolved
Image

CONVOLUTIONAL LAYER

1. imagine a flashlight that is shining over the top left of the image
2. Let's say that the light this flashlight shines covers a 5×5 area
3. And now, let's imagine this flashlight sliding across all the areas of the input image.

1 <small>x1</small>	1 <small>x0</small>	1 <small>x1</small>	0	0
0 <small>x0</small>	1 <small>x1</small>	1 <small>x0</small>	1	0
0 <small>x1</small>	0 <small>x0</small>	1 <small>x1</small>	1	1
0	0	1	1	0
0	1	1	0	0

4		

Image

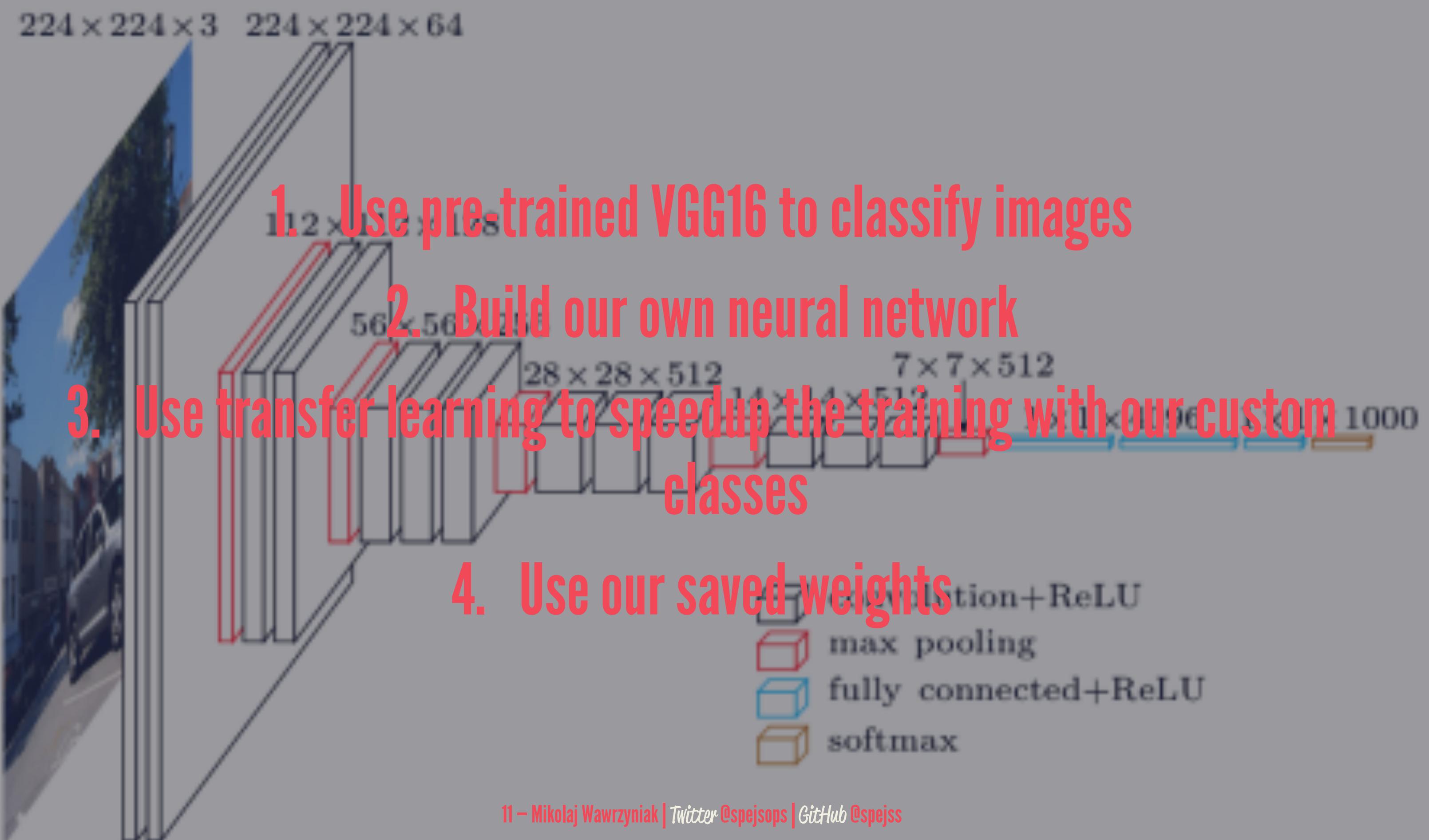
Convolved

- ▶ In CNN terminology, the flashlight is called a ‘filter’ or ‘kernel’ or ‘feature detector’
- ▶ The matrix formed = ‘Convolved Feature’/‘Activation Map’/‘Feature Map’
- ▶ Filters acts as feature detectors from the original input image



Input

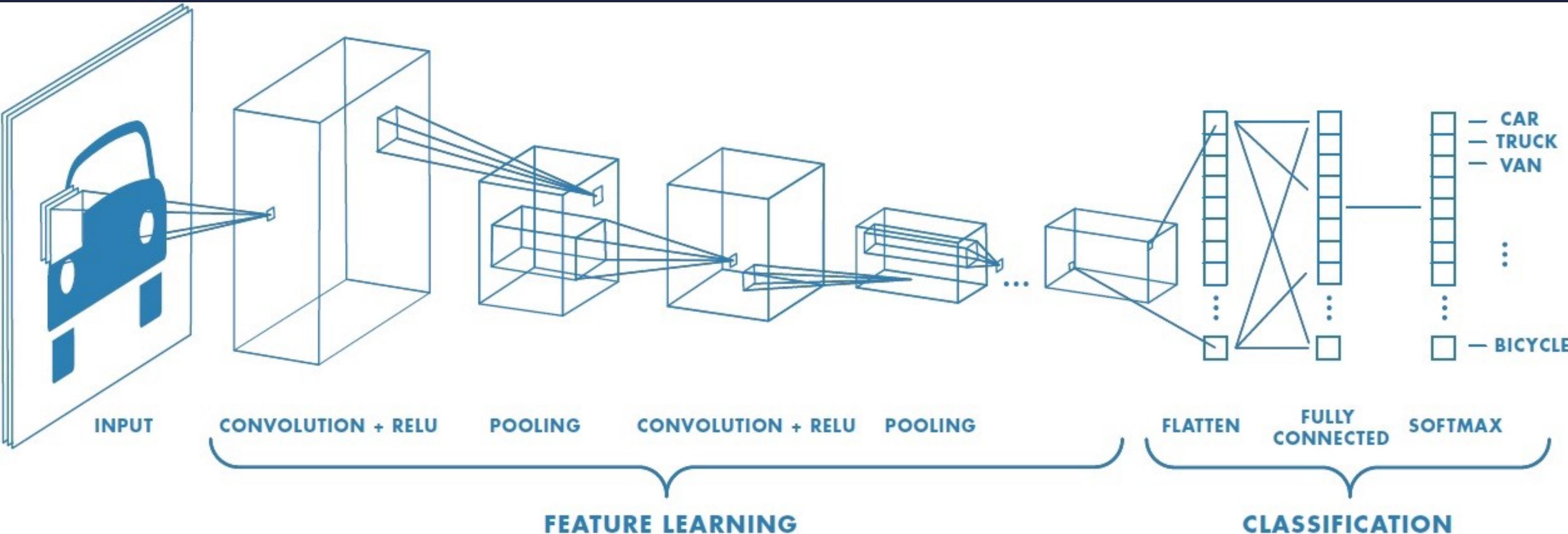
PLAN OF ATTACK



PRE-TRAINED vgg16



TYPICAL CNN ARCHITECTURE



CUSTOM CNN

Breaking News

TRANSFER LEARNING



The application of skills, knowledge, and/or

A black and white photograph showing a row of dumbbells of various weights lined up in a gym. The dumbbells are arranged in two rows, with larger weights at the top and smaller ones at the bottom. The background is slightly blurred, focusing on the weights in the foreground.

USE OWN PRE- TRAINED

FIND ME

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CODE: [GITHUB.COM/SPEJSS/KERAS-TRANSFER-LEARNING-TUTORIAL](#)