Visualizing Neural Nets

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Outline

1. Deep Learning and Neural Networks (*some background)*
2. Class Activation Maps (*visualizing*)
3. Try it yourself! (*run some code)*

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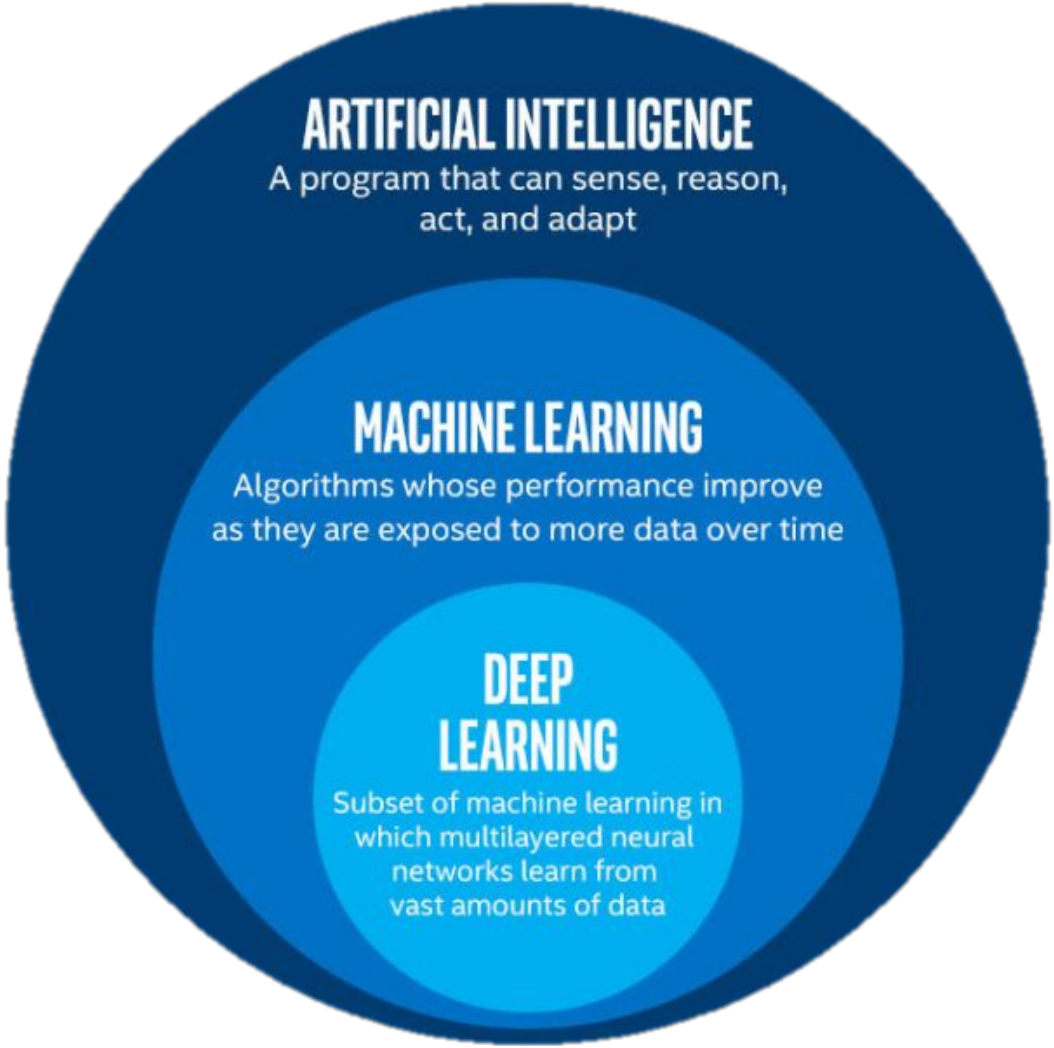
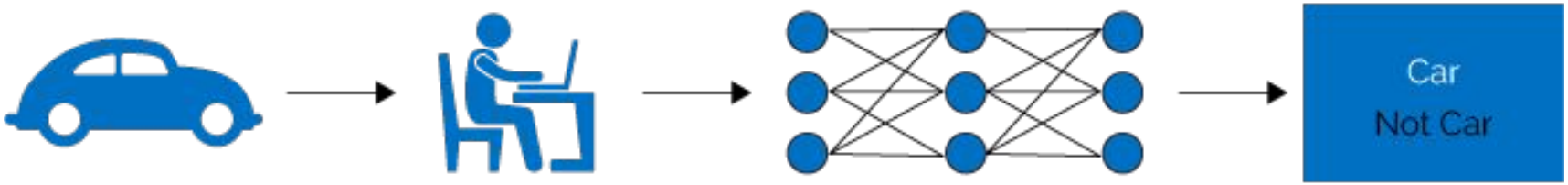
VisionQuest
BIOMEDICAL

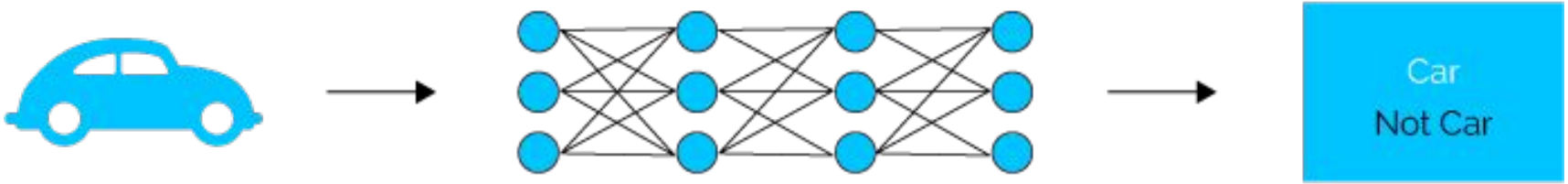

ARTIFICIAL INTELLIGENCE
A program that can sense, reason, act, and adapt
MACHINE LEARNING
Algorithms whose performance improve as they are exposed to more data over time
DEEP LEARNING
Subset of machine learning in which multilayered neural networks learn from vast amounts of data

Machine Learning



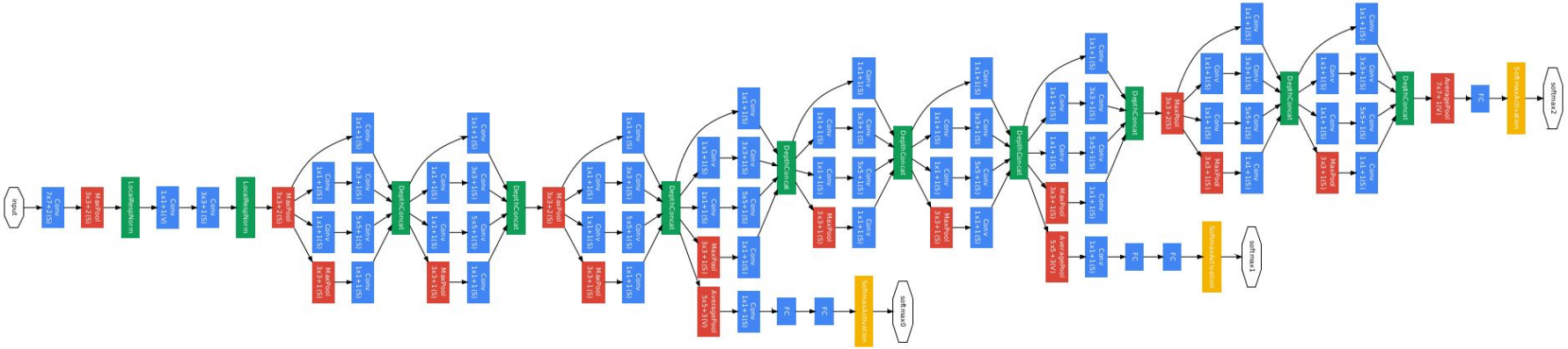
Input → Feature extraction → Classification → Output

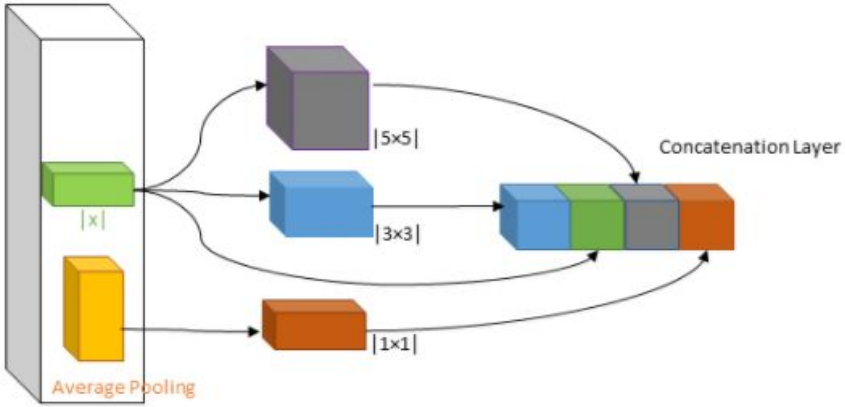
Deep Learning



Input → Feature extraction + Classification → Output

Inception - a convolutional neural network

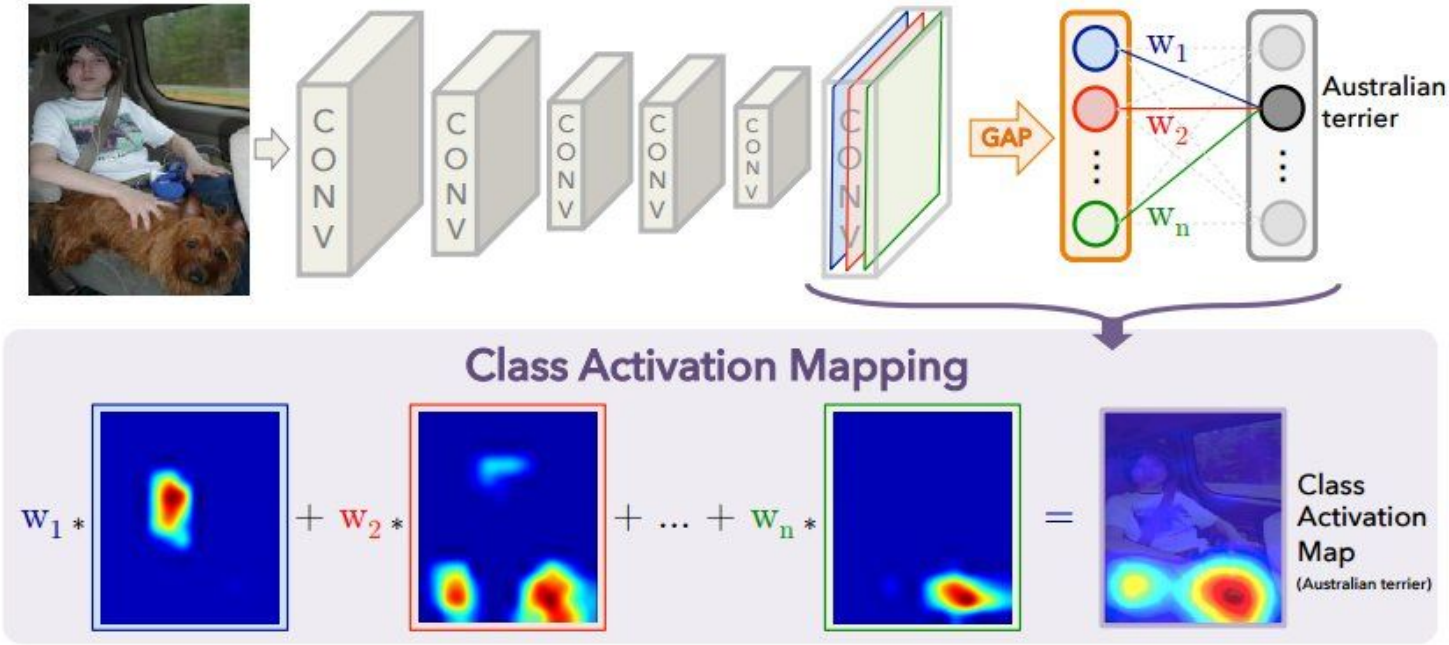




So ...

How do we know what ‘features’ are being ‘created’ or ‘seen’ by the neural net ?

Class Activation Maps



https://github.com/metalbubble/CAM

Example

Scanning through all available prediction classes for a specific neural network that is classifying levels of Diabetic Retinopathy

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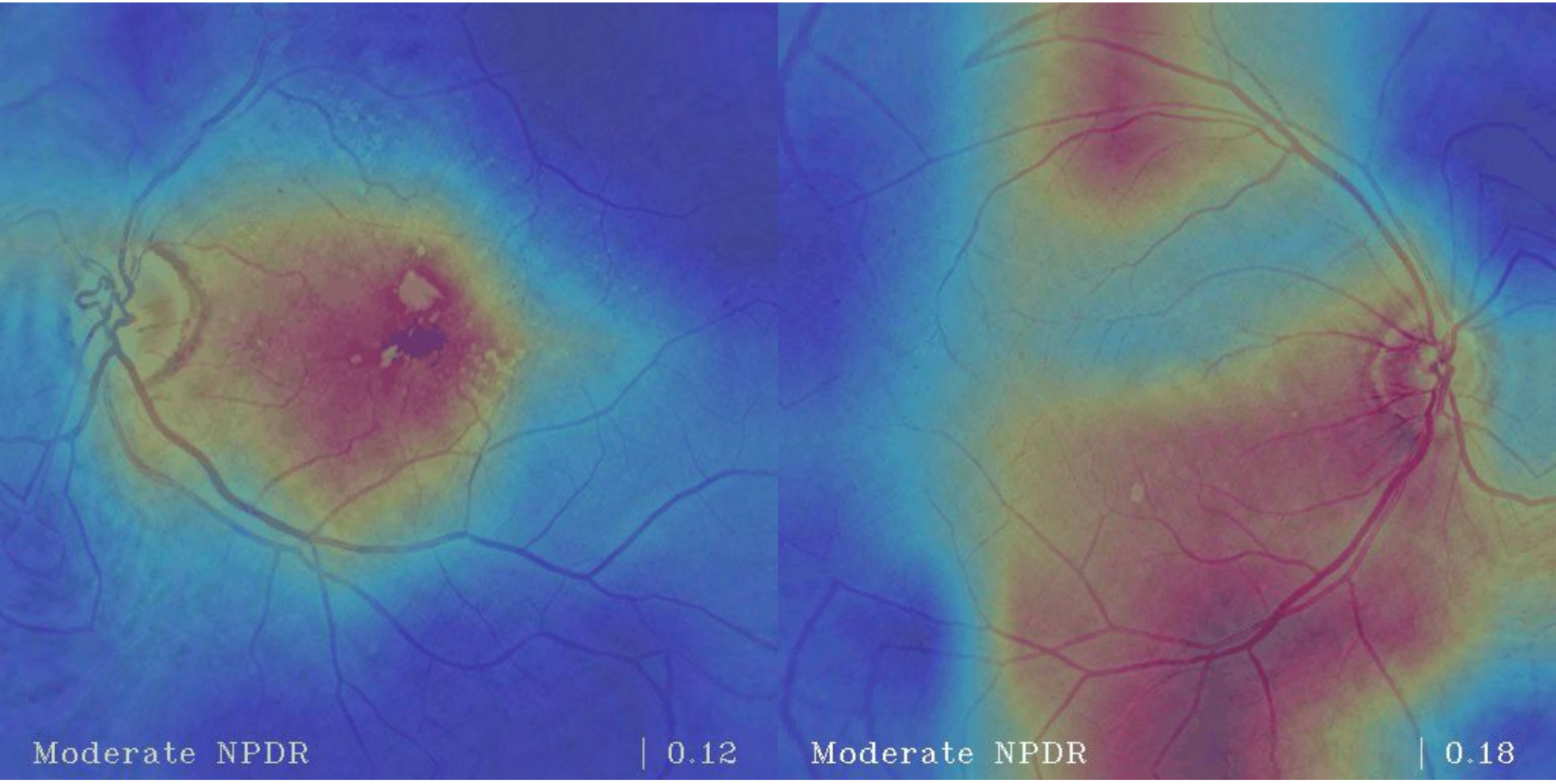
Moderate NPDR | 0.12
Moderate NPDR | 0.18

Class Activation Maps

https://goo.gl/Q3Z2Bx