Neural Style Transfer

What are deep ConvNets learning?

deeplearning.ai

Visualizing what a deep network is learning

Alex net light network

$224 \times 224 \times 3$ $110 \times 110 \times 96$ $55 \times 55 \times 96$ $26 \times 26 \times 256$ $13 \times 13 \times 256$ $13 \times 13 \times 384$ $13 \times 13 \times 384$ $6 \times 6 \times 256$ FC 4096   FC 4096 $\hat{y}$
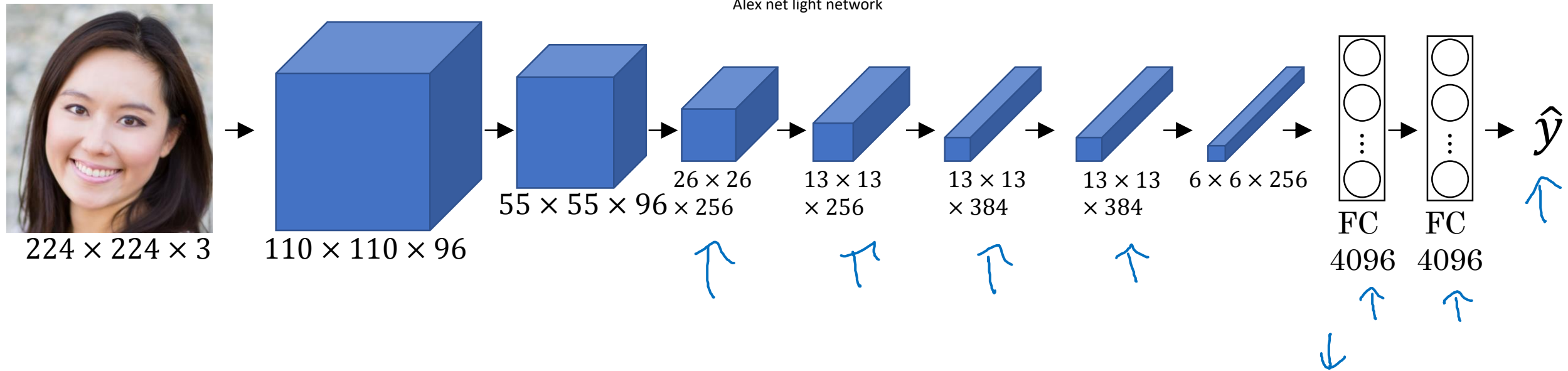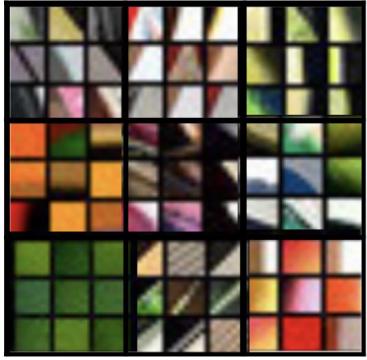
Pick a unit in layer 1. Find the nine image patches that maximize the unit's activation.

Repeat for other units.

receptive filed

[Zeiler and Fergus., 2013, Visualizing and understanding convolutional networks]   Andrew Ng
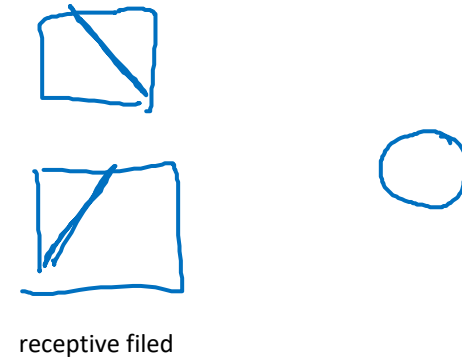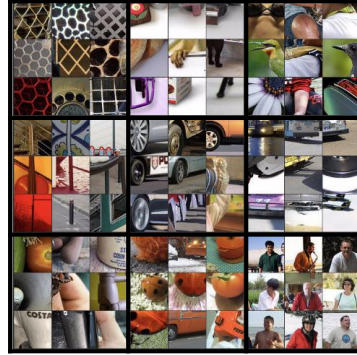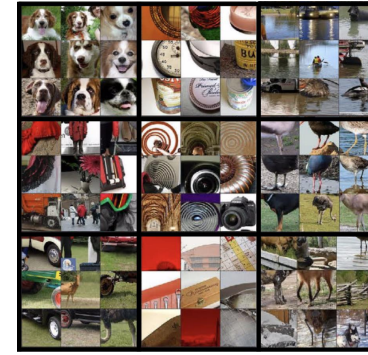
Visualizing deep layers
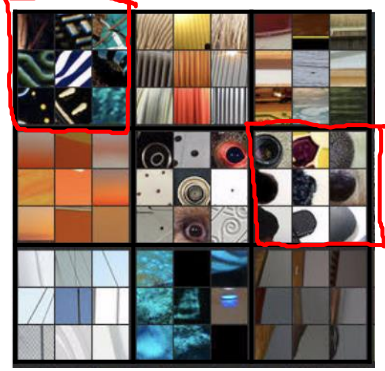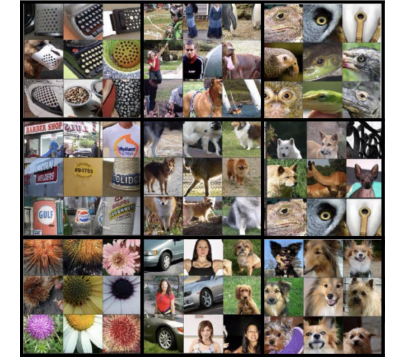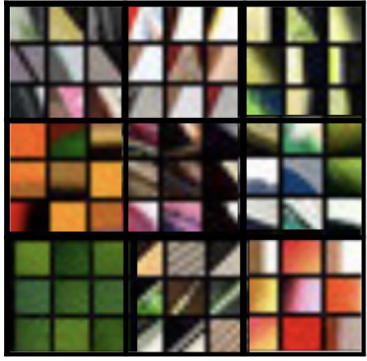

Layer 1

Layer 2

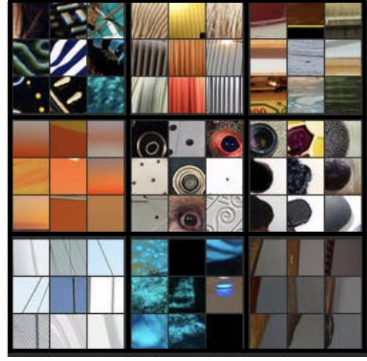

Layer 3

Layer 4

Layer 5

So this is nine different representative neurons and for each of them the nine image patches that they maximally activated on.

So this gives a sense that units trained hidden units in layer one are often looking for relatively simple features, such as an edge or particular shade of color
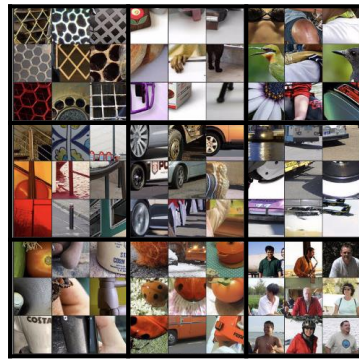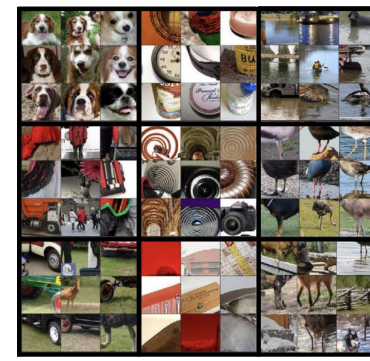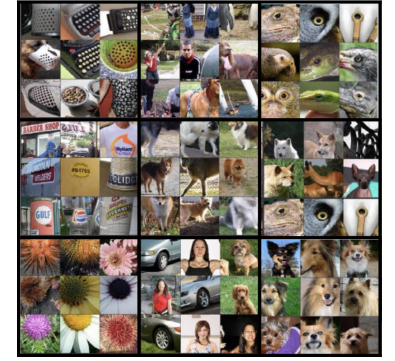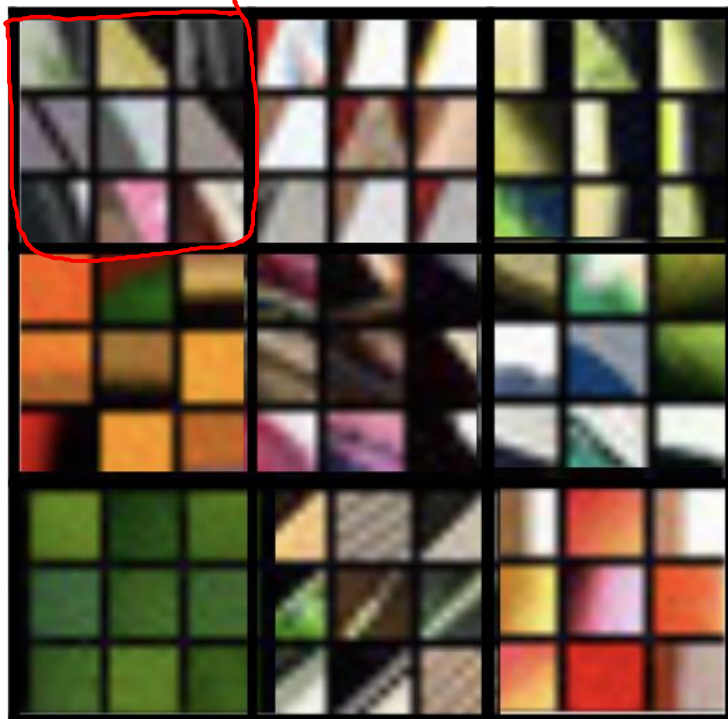
Andrew Ng
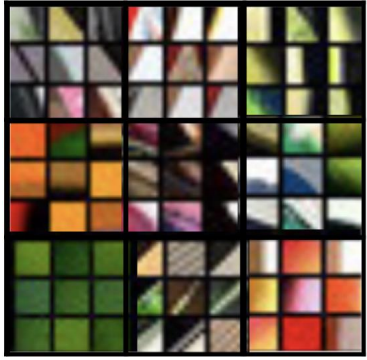
Visualizing deep layers: Layer 1
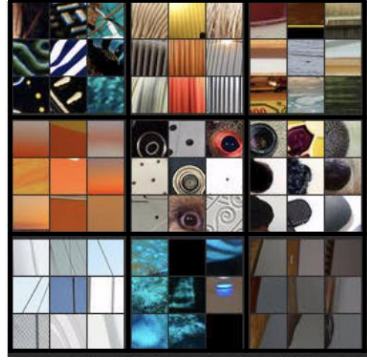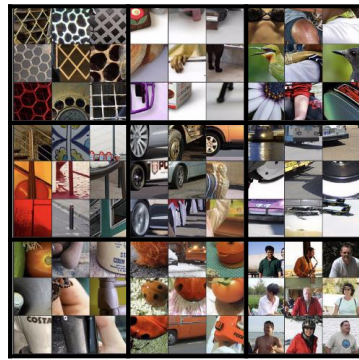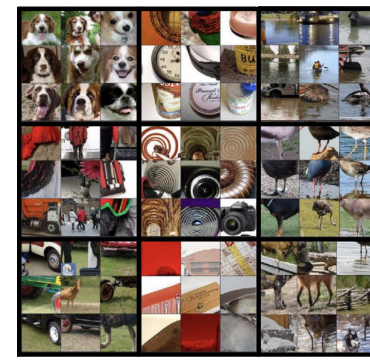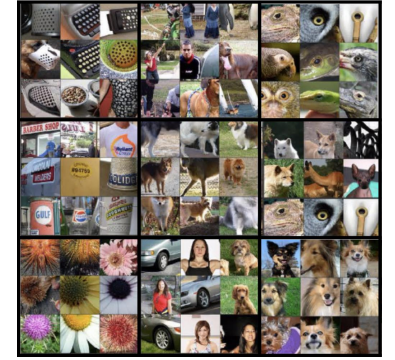

Layer 1

Layer 2

Layer 3

Layer 4

Layer 5

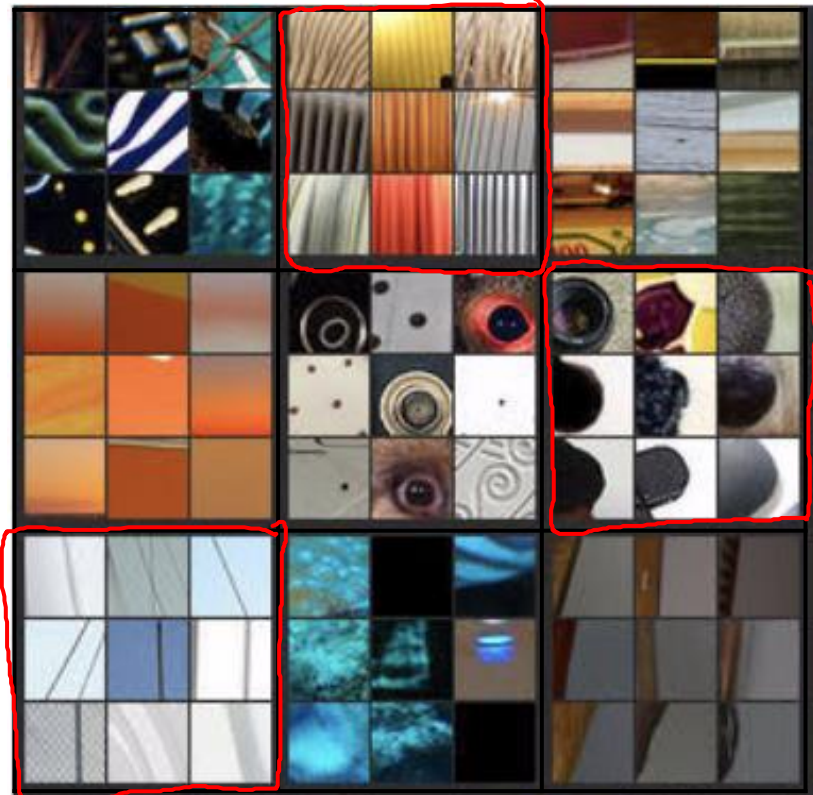# Visualizing deep layers: Layer 2
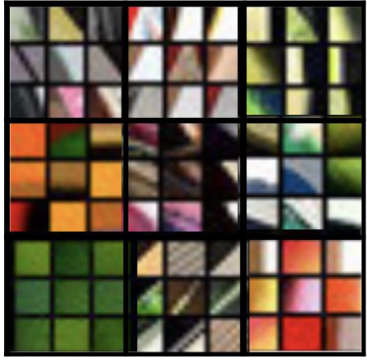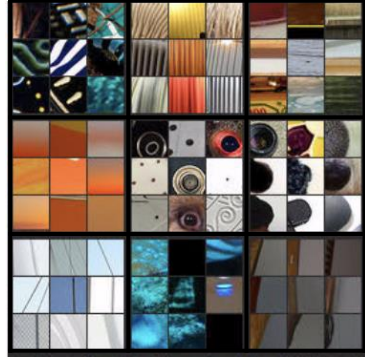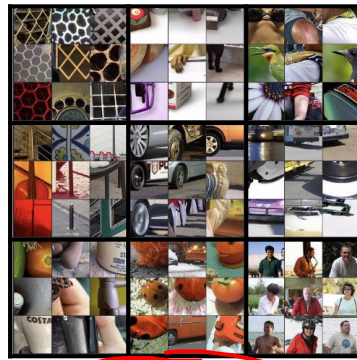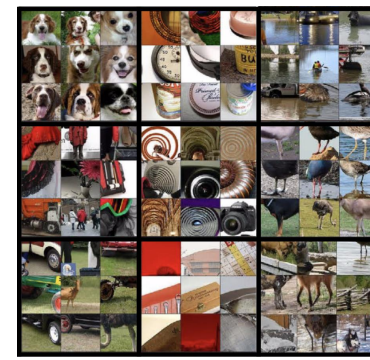

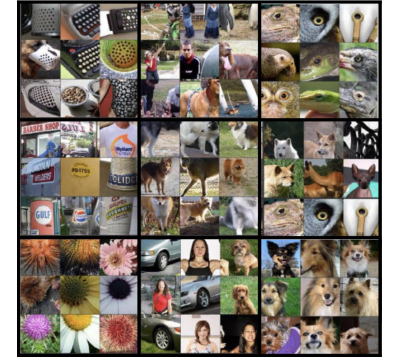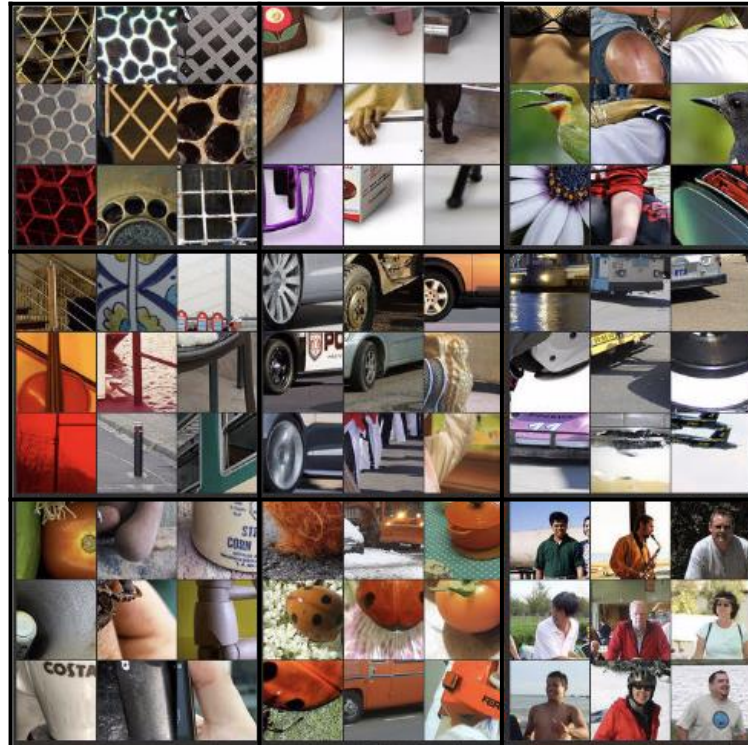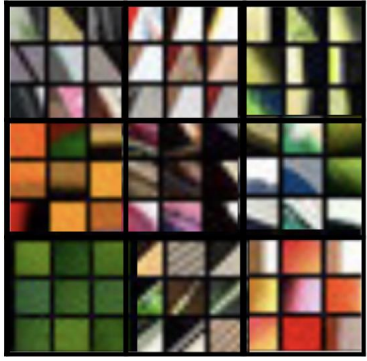Layer 1   Layer 2   Layer 3   Layer 4   Layer 5

Visualizing deep layers: Layer 3

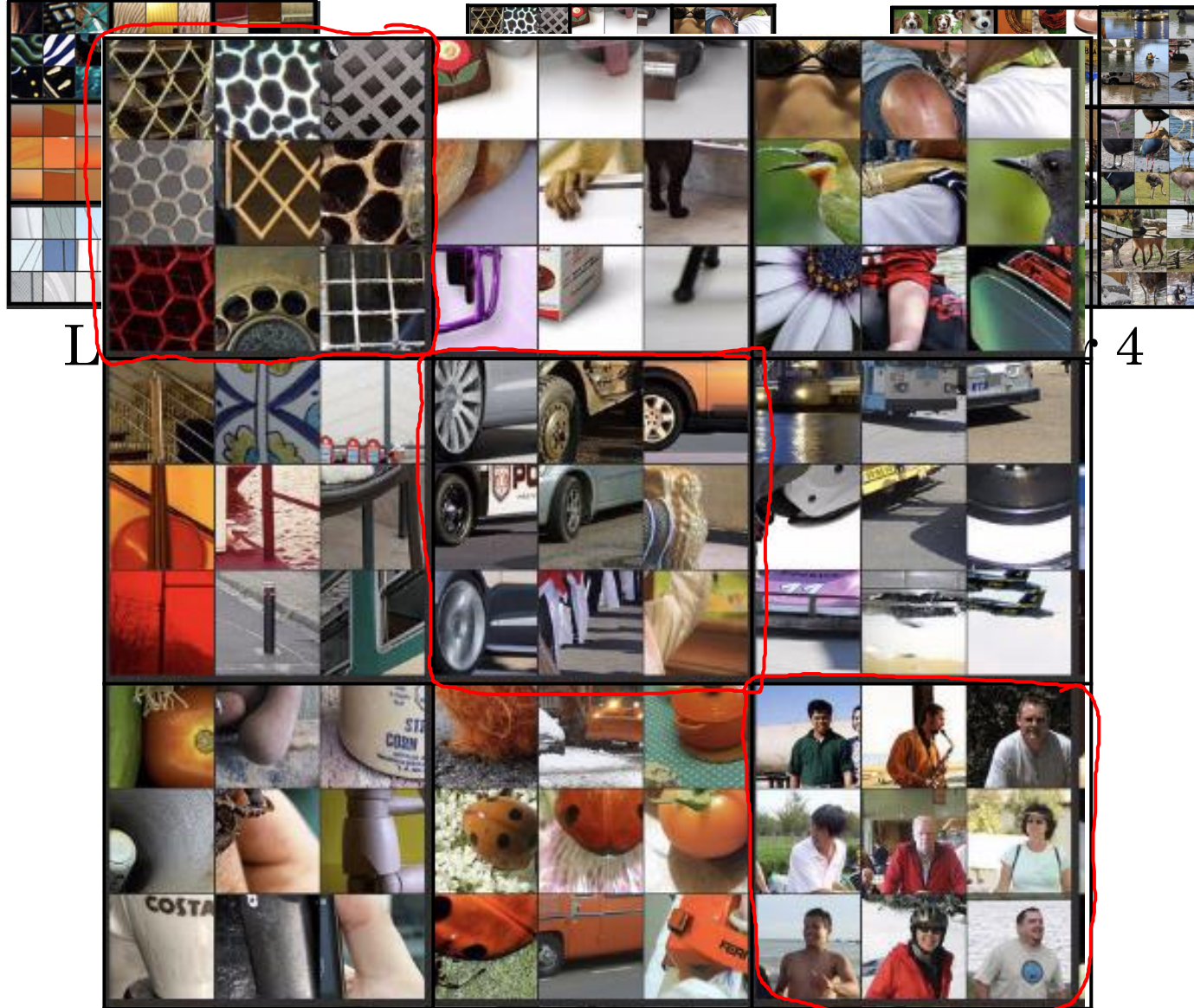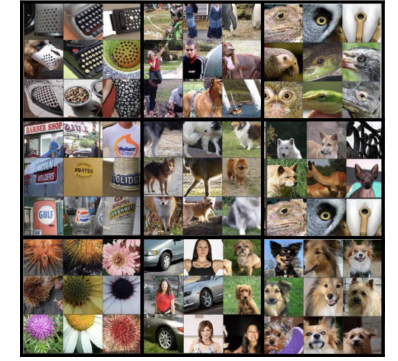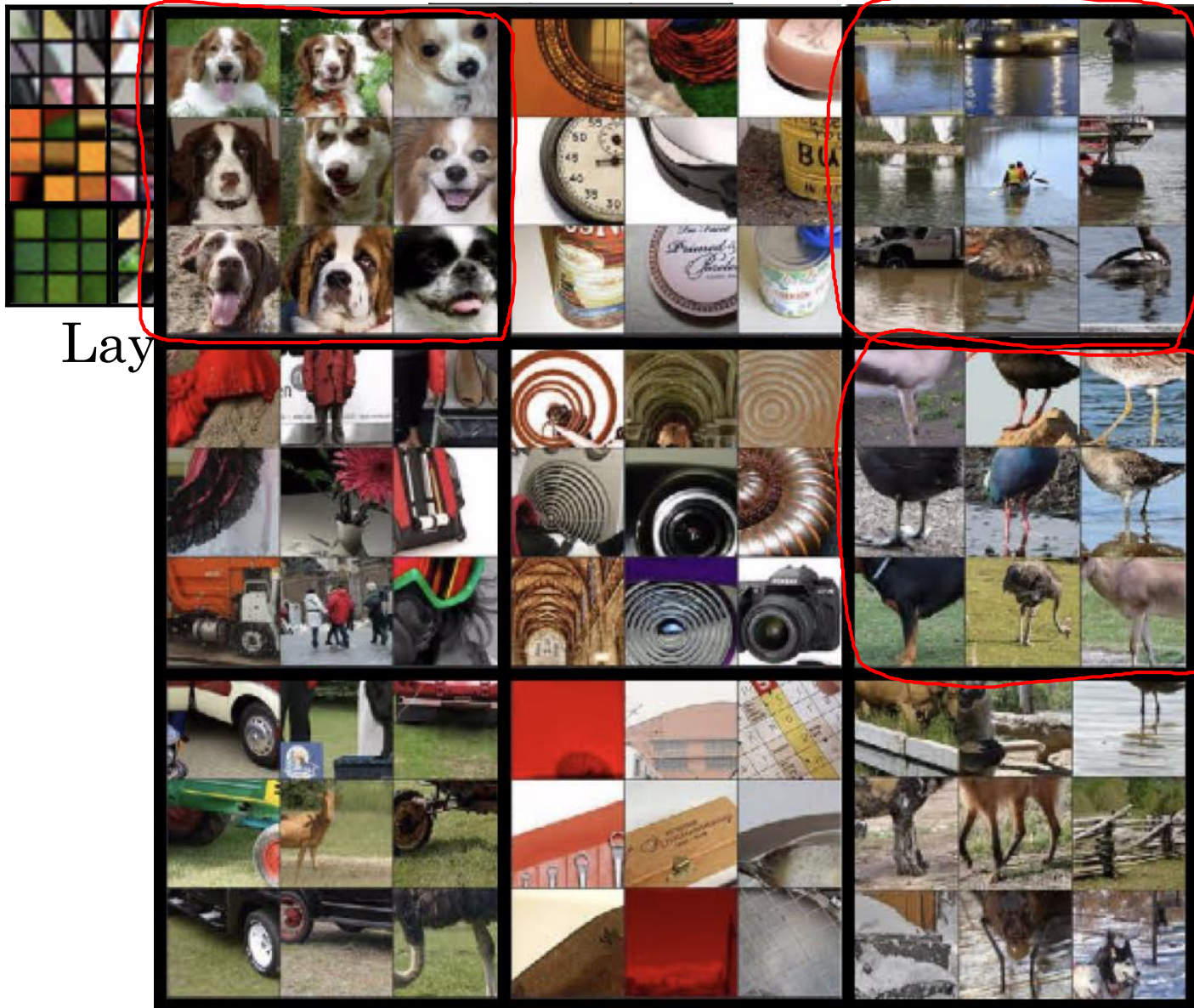Layer 1   Layer 2   Layer 3   Layer 4   Layer 5

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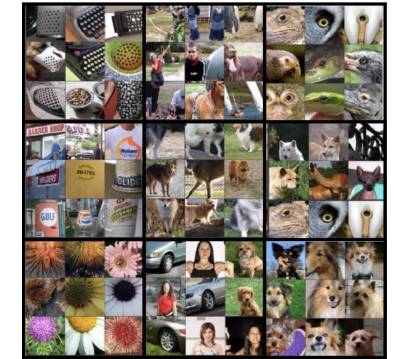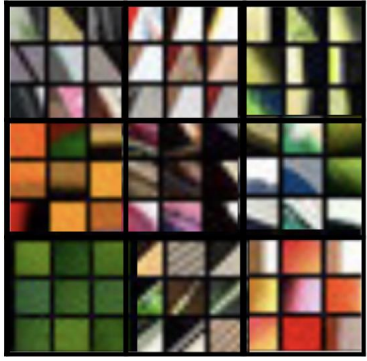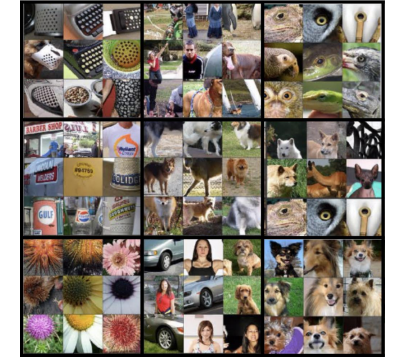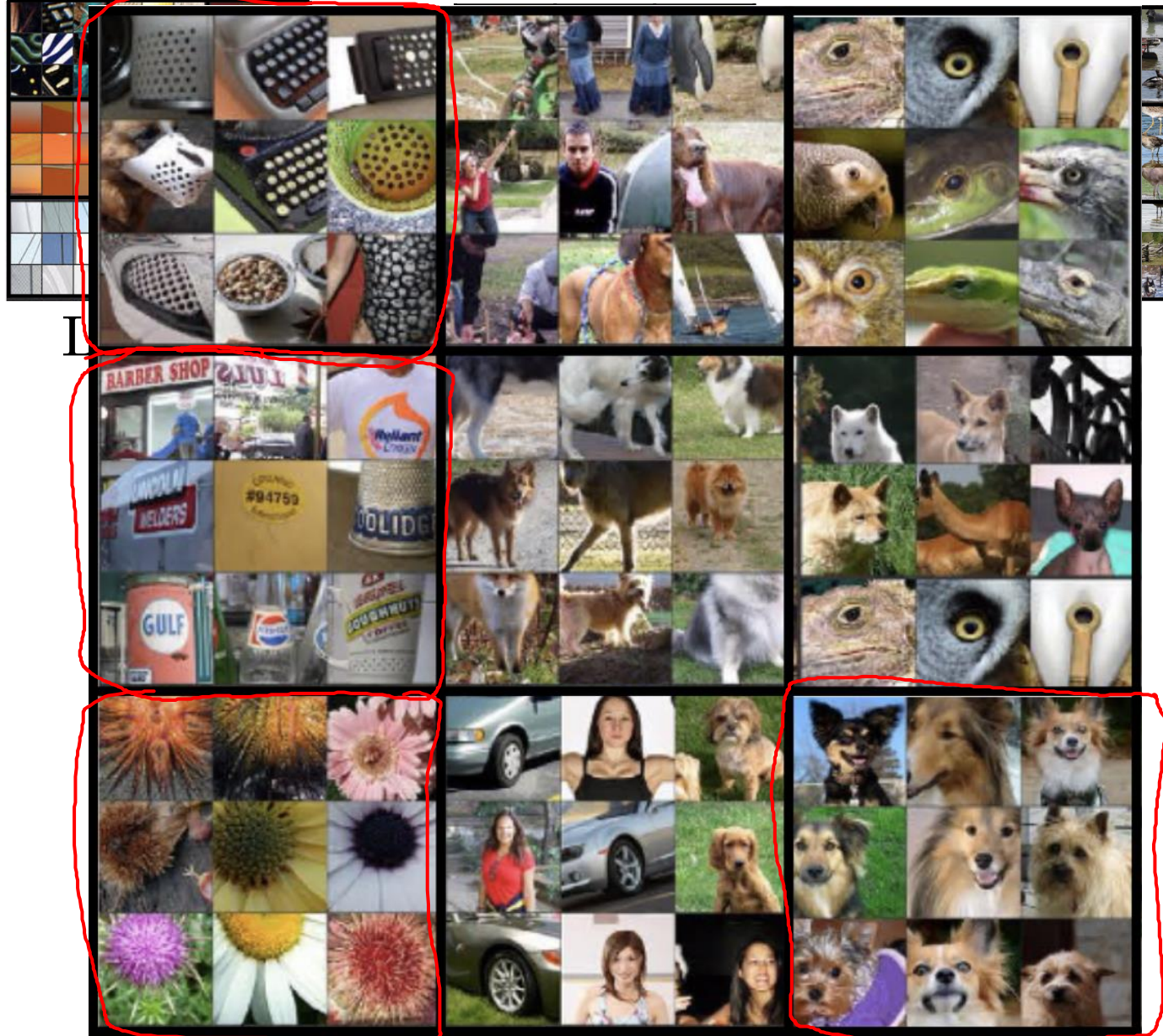# Visualizing deep layers: Layer 3

Layer 1

Layer 2

Layer 4

Layer 5

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Visualizing deep layers: Layer 4

Layer 4

Layer 5

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Visualizing deep layers: Layer 5

Layer 1

Layer 5

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