Convolutional Networks in 1D or 3D

1D and 3D generalizations of models

deeplearning.ai

Convolutions in 2D and 1D

2D filter
5 × 5

2D input image
14 × 14
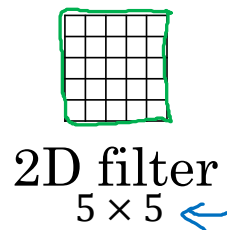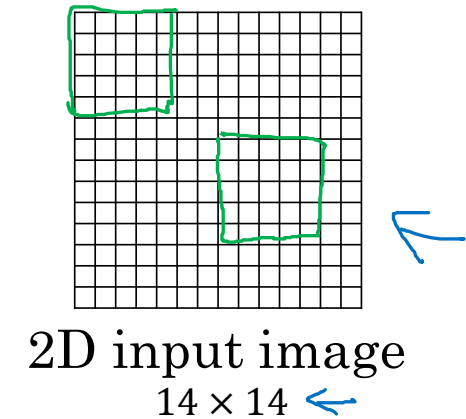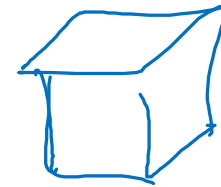
$14 \times 14 \times \underline{3} \quad * \quad 5 \times 5 \times \underline{3}$

$\rightarrow 10 \times 10 \times 16$

$10 \times 10 \times \underline{16} \quad * \quad 5 \times 5 \times \underline{16}$

$\rightarrow 6 \times 6 \times \underline{32}$
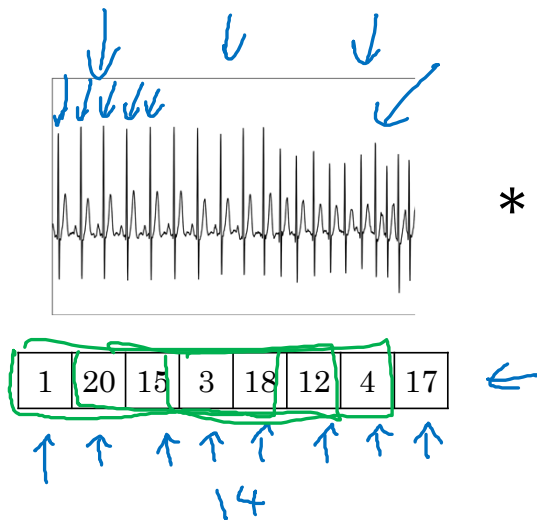
$14 \times \underline{1} \quad * \quad 5 \times \underline{1}$

$\rightarrow 10 \times \underline{16}$

$10 \times \underline{16} \quad * \quad 5 * \underline{16}$

$\rightarrow 6 * \underline{32}$
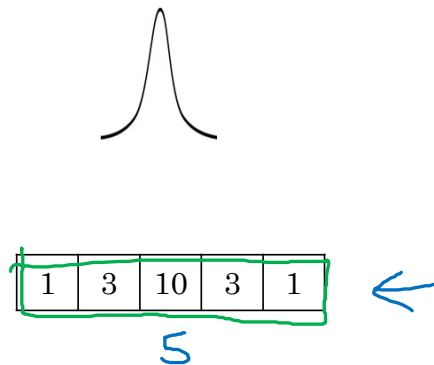
1	20	15	3	18	12	4	17

14

1	3	10	3	1

5

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3D data

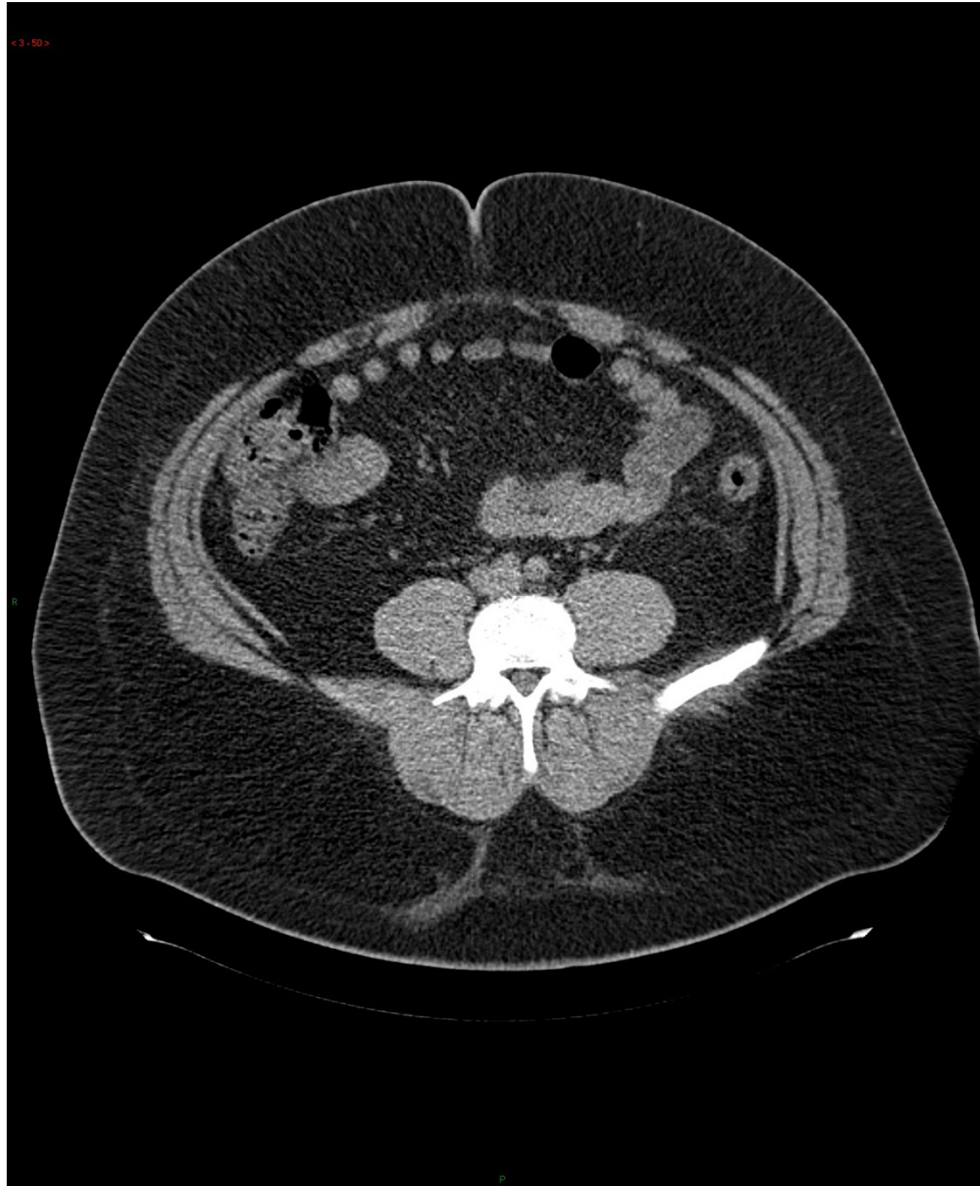Andrew Ng

3D data

3D data
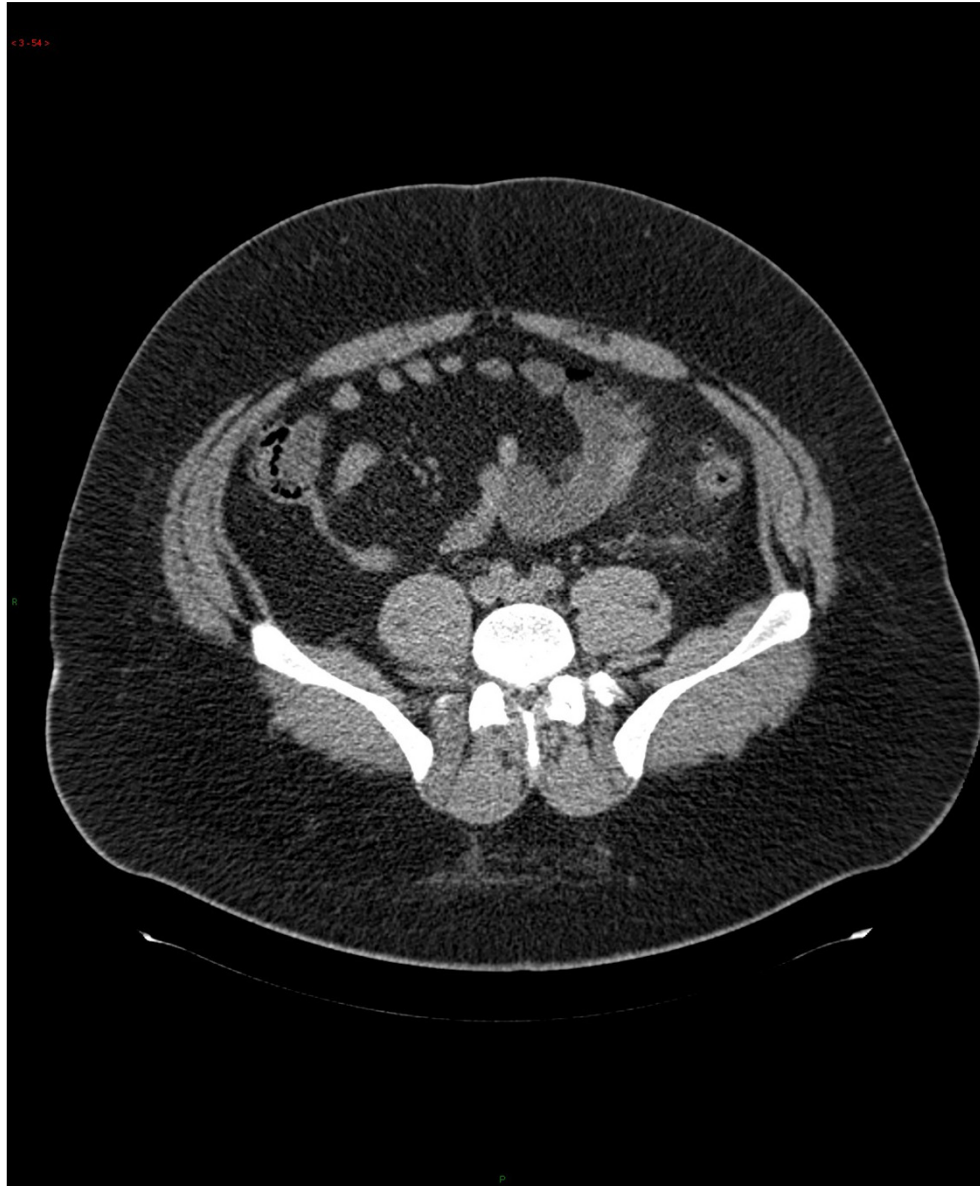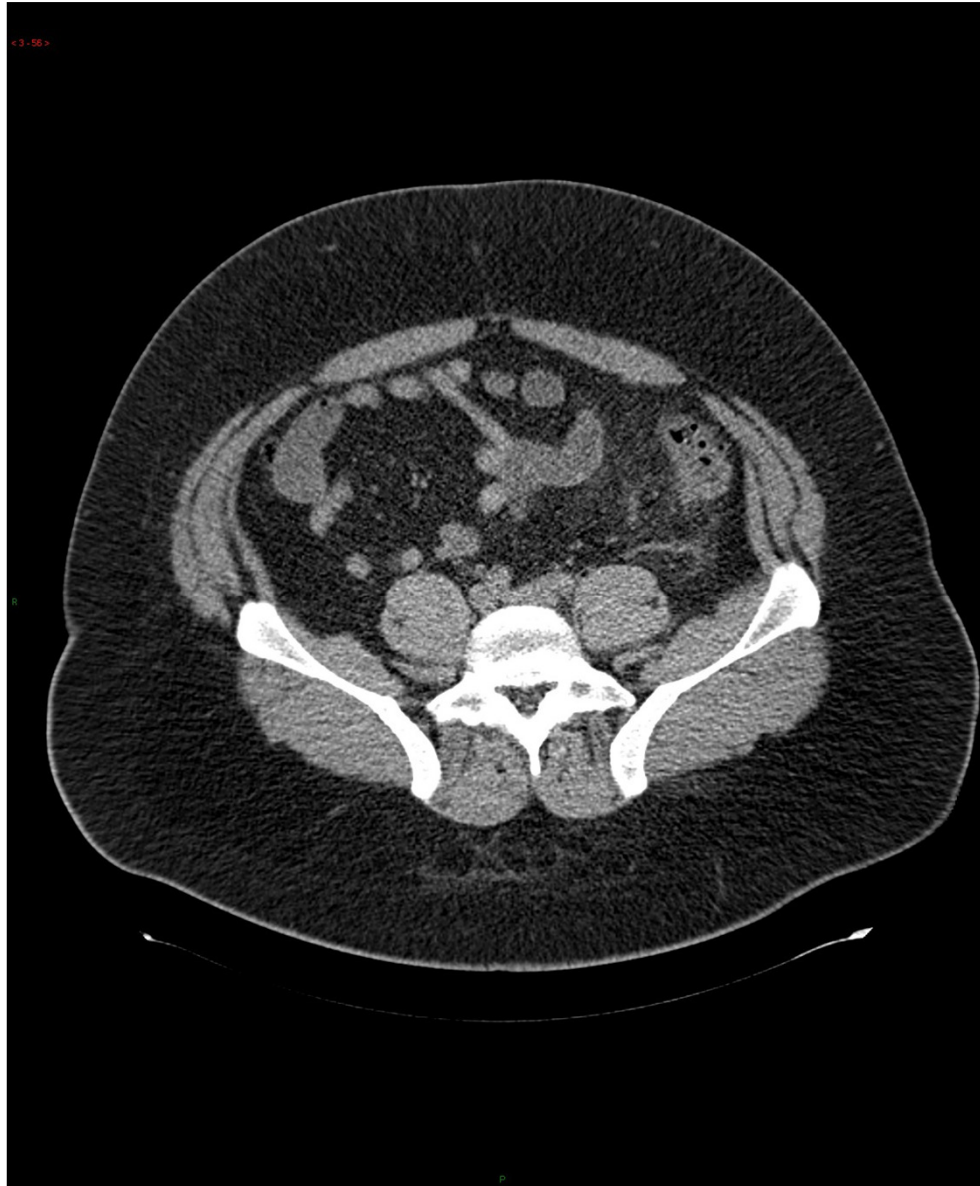
3D data

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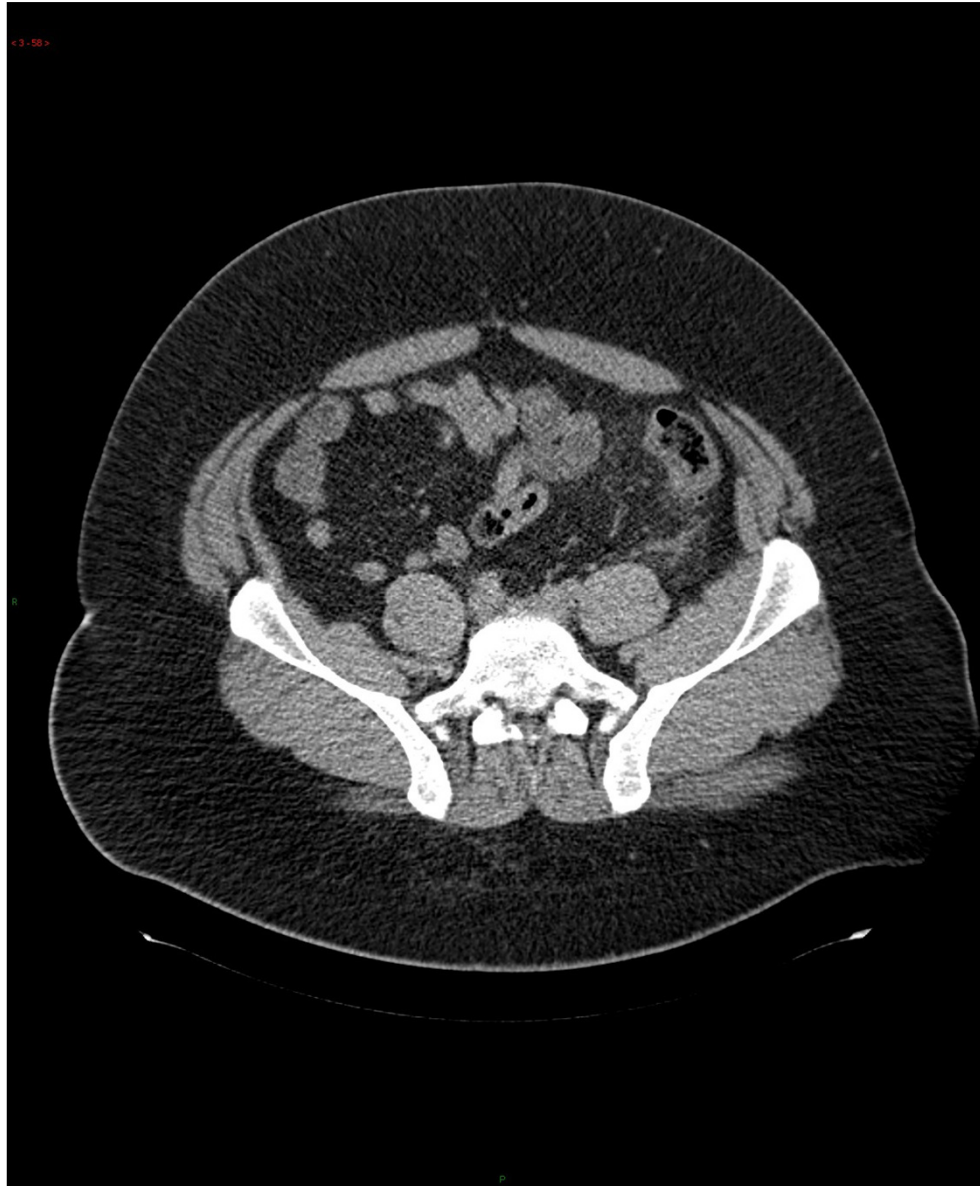
3D data

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3D data

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3D data

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3D data

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3D data

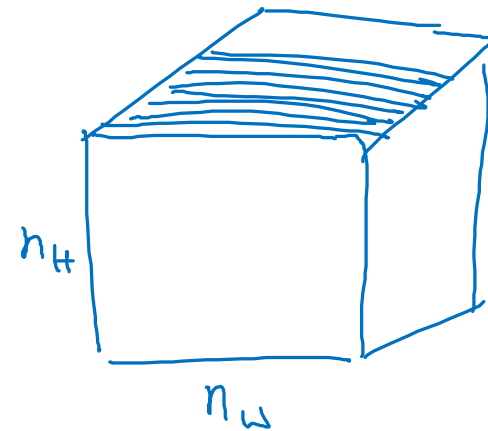Andrew Ng
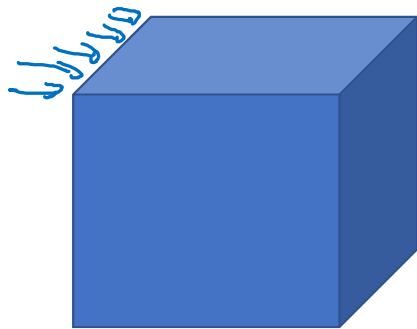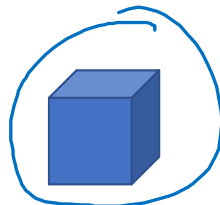
3D data

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3D data

3D convolution

3D volume ↑

* 3D filter

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow^{n_c}$$

$$14 \times 14 \times 14 \times 1$$

$$* \quad 5 \times 5 \times 5 \times 1 \qquad \text{16 filte.}$$

$$\rightarrow 10 \times 10 \times 10 \times 16$$

$$* \; 5 \times 5 \times 5 \times 16$$

$$\qquad\qquad 32 \; \text{filtus}$$

$$\rightarrow 6 \times 6 \times 6 \times 32$$

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