COMPUTER VISION

INTRODUCTION TO IMAGES

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AGENDA

This video lecture focuses on understanding:

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AGENDA

This video lecture focuses on understanding:

- What are filters ?

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AGENDA

This video lecture focuses on understanding:

- What are filters ?
- How filters are designed ?

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AGENDA

This video lecture focuses on understanding:

- What are filters ?
- How filters are designed ?
- How different filters can alter the look and feel of an image ?

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1. FILTERS - A DEEP DIVE

Let us understand what are filters. How a small matrix can be used to alter a larger matrix i.e. an image.

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INDEX

1. FILTERS - A DEEP DIVE

Let us understand what are filters. How a small matrix can be used to alter a larger matrix i.e. an image.

2. WORKING WITH IMAGES ON PYTHON

Let us simulate all the above topics all the above topics and

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1. Filter A DEEP DIVE

Let us use the following image to apply filters on the image . . .

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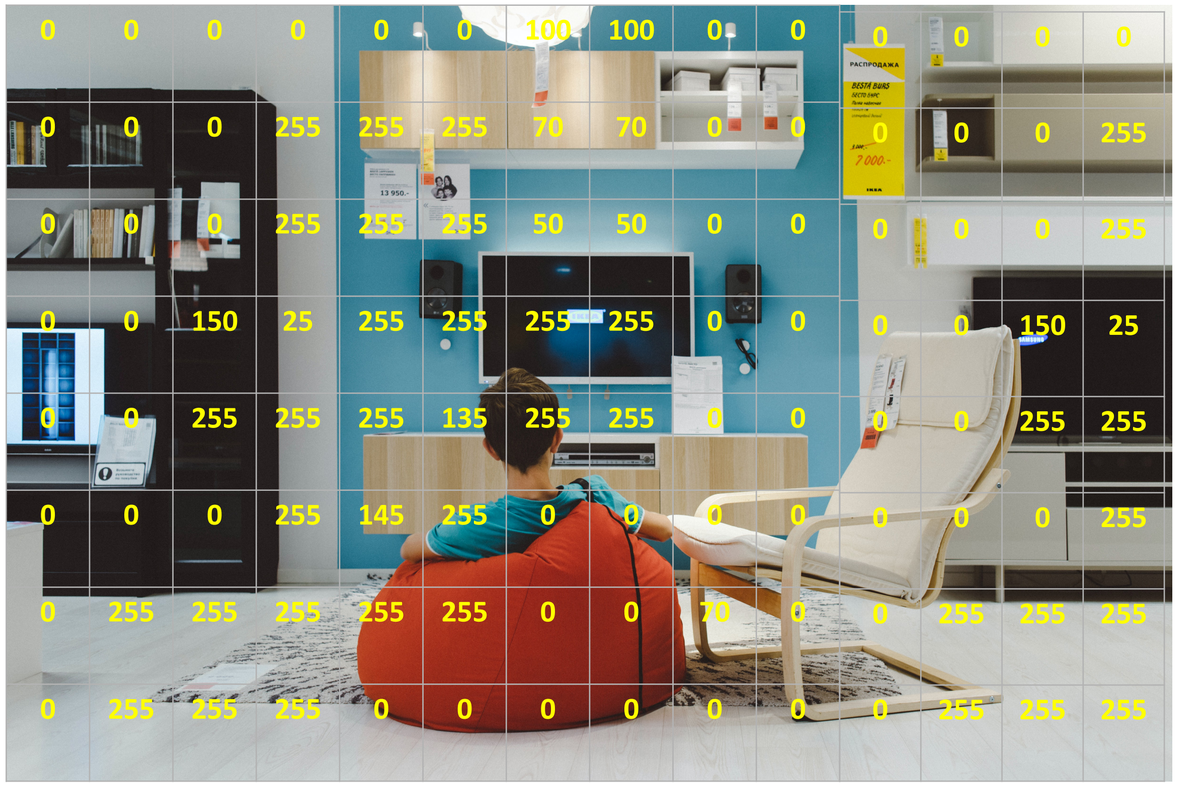
1. Filter A DEEP DIVE

Pixel representation of the image



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1. Filter A DEEP DIVE

Pixel representation of the image

0	0	0	0	0	0	100	100	0	0	0	0	0	0
0	0	0	255	255	255	70	70	0	0	0	0	0	255
0	0	0	255	255	255	50	50	0	0	0	0	0	255
0	0	150	25	255	255	255	255	0	0	0	0	150	25
0	0	255	255	255	135	255	255	0	0	0	0	255	255
0	0	0	255	145	255	0	0	0	0	0	0	0	255
0	255	255	255	255	255	0	0	70	0	0	255	255	255
0	255	255	255	0	0	0	0	0	0	0	255	255	255

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1. Filter A DEEP DIVE

Pixel representation of the image

0	0	0	0	0	0	100	100	0	0	0	0	0	0
0	0	0	255	255	255	70	70	0	0	0	0	0	255
0	0	0	255	255	255	50	50	0	0	0	0	0	255
0	0	150	25	255	255	255	255	0	0	0	0	150	25
0	0	255	255	255	135	255	255	0	0	0	0	255	255
0	0	0	255	145	255	0	0	0	0	0	0	0	255
0	255	255	255	255	255	0	0	70	0	0	255	255	255
0	255	255	255	0	0	0	0	0	0	0	255	255	255

X

-1	-1	-1
-1	8	-1
-1	-1	-1

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1. Filter A DEEP DIVE

Pixel representation of the image

X

-1	-1	-1
-1	8	-1
-1	-1	-1

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1. Filter A DEEP DIVE

APPLY FILTER ON AN IMAGE

X

0	-1	0
-1	5	-1
0	-1	0

Sharpen filter

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APPLY FILTER ON AN IMAGE

X

0	1	0
1	-8	1
0	1	0

Edge detection 2 filter

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2. WORKING WITH IMAGES ON PYTHON

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SUMMARY

An image can be transformed into new forms by multiplying it [larger matrix] with a small matrix [filter].

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