

A05: MANUAL CNN

Team International Neural Intelligence

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ITAI 2376: Deep Learning

February 15, 2024

ORIGINAL IMAGE: LETTER “K”

0	1	0	0	0	0	1	0
0	1	0	0	0	1	0	0
0	1	0	0	1	0	0	0
0	1	0	1	0	0	0	0
0	1	1	0	0	0	0	0
0	1	0	1	0	0	0	0
0	1	0	0	1	0	0	0
0	1	0	0	0	1	0	0

3X3 FILTERS AND MANUAL CONVOLUTION

0	1	0	0	0	0	1	0
0	1	0	0	0	1	0	0
0	1	0	0	1	0	0	0
0	1	0	1	0	0	0	0
0	1	1	0	0	0	0	0
0	1	0	1	0	0	0	0
0	1	0	0	1	0	0	0
0	1	0	0	0	1	0	0

1	0	1
1	1	0
1	0	1

3X3 FILTERS AND MANUAL CONVOLUTION

0	1	0	0	0	0	1	0
0	1	0	0	0	1	0	0
0	1	0	0	1	0	0	0
0	1	0	1	0	0	0	0
0	1	1	0	0	0	0	0
0	1	0	1	0	0	0	0
0	1	0	0	1	0	0	0
0	1	0	0	0	1	0	0

0	0	1
0	1	0
1	0	0

3X3 FILTERS AND MANUAL CONVOLUTION

0	1	0	0	0	0	1	0
0	1	0	0	0	1	0	0
0	1	0	0	1	0	0	0
0	1	0	1	0	0	0	0
0	1	1	0	0	0	0	0
0	1	0	1	0	0	0	0
0	1	0	0	1	0	0	0
0	1	0	0	0	1	0	0

1	0	0
0	1	0
0	0	1

FILTERS

Vertical Edge Detection:

-1 0 1

-1 0 1

-1 0 1

Diagonal Edge Detection (Top-Left to Bottom-Right):

-1 0 0

0 1 0

0 0 -1

Diagonal Edge Detection (Bottom-Left to Top-Right):

0 0 -1

0 1 0

-1 0 0

Horizontal Edge Detection:

-1 -1 -1

0 0 0

1 1 1