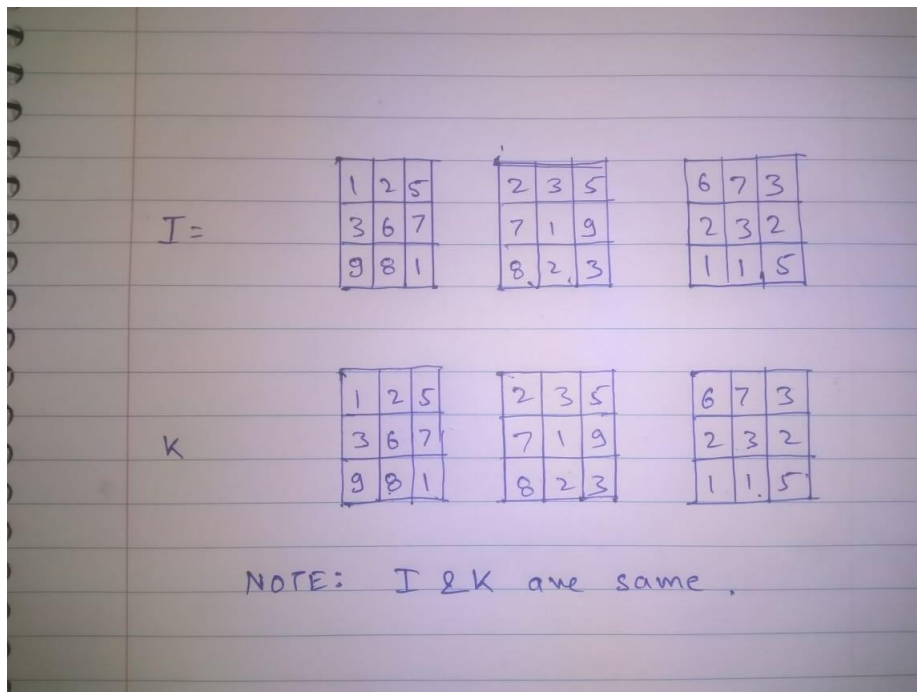


MIDSEM EXAM

COMPUTER VISION, WINTER 2021-22 [10 Marks, 50 mins]

[3:00-3:05=Reading Question paper, 3:05-3:55=Answering Questions, 3:55-4:00=Submission]

Q1) Compute convolutional output of Image 'I' with filter 'k' as performed in a CNN. Assume no padding. [2 marks]



Q2) Give two ways of reducing spatial dimensions in subsequent layers of a CNN? Illustrate them on the following layer. [2 marks]

12	23	34	45
56	67	78	89
90	98	87	76
65	54	43	32

Q3) Define bandwidth parameter in Mean Shift algorithm. In the data given at the following link, what will be the new center after a mean-shift step if the bandwidth is 20 and the initial center is “*International Journal of Computer Vision*”. Use Manhattan distance for easier calculation. Use serial numbers to denote venues while referring to them. For example, you can denote BMVC as Venue10. [2 marks]

https://scholar.google.co.in/citations?view_op=top_venues&hl=en&vq=eng_computervisionpatternrecognition

Q4) In an image of dimensions 200 X 800, if you wish to have 400 super-pixels, how much gap do you need to leave between any two initial super-pixel centers? [2 marks]

Q5) Write pseudocode of a function that outputs a circular mask in binary format, as shown below, of radius 'r' with center at location (x,y), where 'x' and 'y' are row and column numbers, respectively. The output mask will be of dimensions 'h' X 'w'. The function should take 'r', 'x', 'y', 'h' and 'w' as inputs. [2 marks]

