**Task 2.2C Answer sheet**

Fill in the “**Results**” column with relevant results

**Notes**:

* Missing any required results will result in a re-submission.

**1. Calculating edge orientations**

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|  | **Result** |
| **Histogram of the edge orientations of fisherman.jpg** |  |
| **Histogram of the edge orientations of empire.jpg** |  |

**Discussion the difference between the histograms of the edge orientations of fisherman.jpg and empire.jpg**

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| Strong and regular spikes at specific angles can be seen in the edge orientation histogram for fisherman.jpg, suggesting that the image is highly structured with dominant edge directions. empire.jpg's histogram, on the other hand, shows a lower magnitude pattern that is more uniformly distributed and has fewer sudden peaks. This suggests that the edge orientations are more variable and less repeated, most likely because of curved curves, natural structures, or gentler transitions. The directional elements in fisherman.jpg are more noticeable and repetitive, but the orientation landscape in empire.jpg is more varied and less consistent. |
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**2. Applying morphology for document skew estimation**

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|  | **Result** |
| **Binary image (i.e., doc\_bin) for doc.jpg** |  |
| **Closing result (i.e., closing) for doc.jpg** |  |
| **Opening result (i.e., opening) for doc.jpg** |  |
| **Deskewing result (i.e., doc\_deskewed) for doc.jpg** |  |
| **Binary image (i.e., doc\_bin) for doc\_1.jpg** |  |
| **Closing result (i.e., closing) for doc\_1.jpg** |  |
| **Opening result (i.e., opening) for doc\_1.jpg** |  |
| **Deskewing result (i.e., doc\_deskewed) for doc\_1.jpg** |  |

**Does the method successfully work in this case? If not, what could be the reason? Observe the result and discuss your observations.**

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| The skew correction method successfully deskews doc.jpg because its text is consistently distributed in horizontal lines, allowing the morphological operations and related component analysis to precisely separate and analyze each line. The orientation of these linear components can then be accurately estimated by the least squares regression, producing an image that has been appropriately corrected and a precise median skew angle.  Doc\_1.jpg, however, is not properly deskewed. This is most likely due to the document's high tilt and potential distortion, which causes the morphological procedures to incorrectly group text lines or letters. As a result, the calculated orientations become uncertain, and the connected components might not match up with the appropriate horizontal text lines. |