

Assingment 4, Task 1

Group: 3

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1 Task 1

1.1 (a)

The dominant direction of the keypoint is 45° , this is because that direction corresponds to the strongest bin. e.g. highest $p(\theta)$:

$$\operatorname{argmax}_{\theta} p(\theta) = 45^\circ$$

1.2 (b)

Two keypoints will be created with orientations $\theta_1 = 45^\circ$ and $\theta_2 = 225^\circ$. This is because SIFT creates key points for orientations with a bin value of at least 80% of the strongest bin. In this case:

$$p(\theta_1) = 0.3 \tag{1}$$

$$p(\theta_2) = 0.25 \tag{2}$$

$$0.25/0.3 = 0.83 \times 100\% = 83\% \tag{3}$$