Using device: CUDA

Task execution time: 0.98 seconds

Completed Tasks:

Task 1.1: Load CIFAR-10 Dataset ✓

Task 1.2: Visualize CIFAR-10 Samples ✓

Task 1.3: Convert to Grayscale ✓

Task 2.1: Extract SIFT Features ✓

Task 2.2: Visualize SIFT Keypoints ✓

Task 3.1: Generate Codebook ✓

Task 3.2: Create BoVW Histograms ✓

Task 4.1: Train SVM Classifier ✓

Reset (Clear Task)

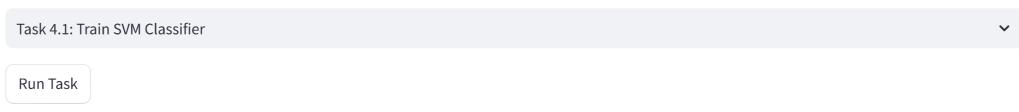
CIFAR-10 Image Classification with BoVW and CNN

This application implements image classification on the CIFAR-10 dataset using:

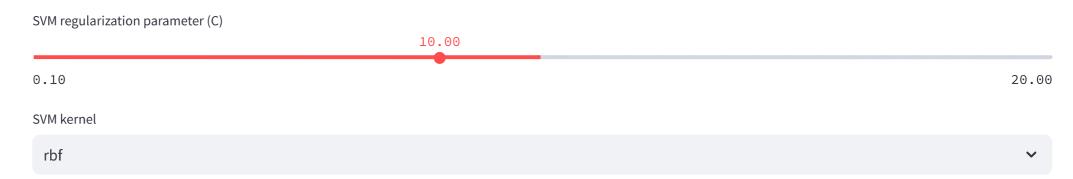
- Bag of Visual Words (BoVW) model with SVM classifier
- Deep Learning approach with ResNet-18 CNN
- Data augmentation techniques

Follow the tasks step by step using the dropdown menu.

Select a task to run:



Task 4.1: Train SVM Classifier



SVM Classification Results

Accuracy: 0.1803

Precision: 0.1914

Recall: 0.1803

F1-Score: 0.1774

Confusion Matrix - SVM

- 300

- 250

- 200

- 150

- 100

- 50

airplan	e - 128	27	124	36	197	25	72	69	264	58
automobil	e - 19	142	97	82	136	81	110	25	99	209
bird -	d - 84	33	134	72	233	69	105	47	152	71
ca	t - 29	62	106	167	160	94	115	56	56	155
Jrue dee	r- 31	57	73	90	233	90	160	48	90	128
do	g - 14	44	114	178	136	99	136	58	59	162
fro	g - 18	77	116	135	165	91	156	44	61	137
hors	e - 25	50	101	81	171	99	84	141	57	191
shi	o - 68	25	105	83	215	36	73	28	286	81
truc	k - 23	138	78	60	125	81	73	45	60	317
	airplane -	automobile -	- pird -	cat -	deer -	- bop	frog -	horse -	- dihs	truck -
		Predicted								