**GIK Institute of Eng. and Tech.**

*Faculty of computer Sciences and Engineering*

**Robotic Vision**

**Assignment # 1**

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**Part I:**

For the first part CIFAR10 public dataset was downloaded during run time on Google Colab and was trained for 1000 epochs.   
  
The incomplete was completed and model was trained successfully it can verified by compiling the part 1 code file.  
  
The combination of feature extractors were used as per guideline can be confirmed in code file.

**Part II:**

For this part the complex dataset used is CIFAR100 that has 100 classes as compared to the previous dataset which had 10.

As sir recommended that we can use SIFT feature descriptor instead of SURF, so in this code SIFT is used.

The values of accuracy, precision and recall was calculated according to instruction and the complete table is attached in this file.

The values of table can be verified by running the code files of part 2.

The MSER feature detector with SIFT descriptor was not fully completed i.e. the code was written but error couldn’t be removed due to less time remaining. That is why the values for this are not completed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ANN Model** | **Feature Detector** | **Feature Descriptor** | **Accuracy** | **Precision** | **Recall** |
| **ANN Model 1**  (For example, ANN with **01** hidden layer, and the size of layer = **10**) | ANN on raw images | | Training: 0.30  Validation: 0.012  Test:  0.012 | Training:  0.03  Validation:  0.01  Test:  0.01 | Training:  0.07  Validation:  0.04  Test:  0.04 |
| Eigen | Block | 0.02 | 0.01 | 0.0003996 |
| SIFT | 0.02 | 0.0 | 0.0003996 |
| Harris | Block | 0.165 | 0.1965 | 0.165 |
| SIFT | 0.165 | 0.01 | 0.197 |
| MSER | Block | 0.08 | 0.0333 | 0.07166 |
| SIFT | - | - | - |
| **ANN Model 2**  (For example, ANN with **03** hidden layers, and the size of each hidden layer = **10**) | ANN on raw images | | 0.02 | 0.0 | 0.003 |
| Eigen | Block | 0.04 | 0.0008 | 0.03 |
| SIFT | 0.04 | 0.00012 | 0.04 |
| Harris | Block | 0.25 | 0.22 | 0.22 |
| SIFT | 0.30 | 0.0 | 0.01 |
| MSER | Block | 0.15 | 0.07 | 0.115 |
| SIFT | - | - | - |
| **ANN Model 3**  (For example, ANN with **05** hidden layer, and the size of each hidden layer = **20**) | All the combinations mentioned above  Accuracy: 0.30  Precision: 0.065  Recall: 0.15 | | | | |