**MARKING FORM (Capped to 100 marks) (divide by 5 to give total 20%)**

**Training the automatic system (40 marks)**

* **Pre-processing**: is it needed?, gamma correction, whitening, normalisation (+2 mark)
* **Feature extraction**: feature/s
  + **Raw pixel based**  (4 marks)
  + **Dimensionality reduction** (6 marks)
  + **HOG** (6 marks)
* **Classification**: strategy, value of the decider
  + **NN** (4 marks)
  + **K-NN** (6 marks)
  + **SVM** (7marks)
  + Neural networks (+7 extra)
  + Boosting (+7 extra)
* **Parameter tunning:** good decision justified theoretically and practically (7 marks)

**Testing the system (20 marks)**

* **Split of dataset in training and testing**
  + Half/half (3 mark)
  + Cross validation (+5 mark)
* **Evaluate the performance of the system**
  + Recognition rate (3 mark)
  + Type I and II errors, sensititvity, precision…. (4 mark)
  + Roc curves (+5 extra)
* **Reflect and explain the results that you have obtained**
  + Comparison of different methods. The more, the better (5 marks)
  + Why and when it fails? (5 marks)

**Detection implementation (40 marks)**

* **Use of best model generated in training**  (3 mark)
* **Sliding window detector**
  + **Horizontal and vertical scan**  (6 marks)
  + **Multi-scale** (7 marks)
* **Non-maxima suppresion** (10 marks)
* **Performance:** using test.dataset
  + Detection rate, sensitivity, specificity (4 marks)
  + Output videos (3 marks)
  + Reflection. Spotting failures (7 marks)
* **Multi-target tracker**
  + Tracking by detection (+7 marks)
  + Reflect on improvement using tracking:sensitivity, specificity (+5 marks)

**MARKING FORM**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Topic** | | | **Score** | **Maximum score** |
| Training | Preprocessing | | | |  | +2 |
| Feature Extraction | | Raw pixels | |  | 4 |
| Dimensionality reduction | |  | 6 |
| HOG | |  | 6 |
| Classification | | NN | |  | 4 |
| K-NN | |  | 6 |
| SVM | |  | 7 |
| Neural Network | |  | +7 |
| Boosting | |  | +7 |
| Parameter Tuning | | | |  | 7 |
| Testing | Training/testing separation | | 50-50 | |  | 3 |
| Cross Validation | |  | +5 |
| Performance Evaluation | | Recognition Rate | |  | 3 |
| Type I-II errors | |  | 4 |
| ROC curves | |  | +5 |
| Analysis | | | |  | 5 |
| Reflection | | | |  | 5 |
| Detector | Selection from previous phase | | | |  | 3 |
| Sliding Window | | | Hor/Ver Scan |  | 6 |
| Multi scale |  | 7 |
| NMS | | | |  | 10 |
| Evaluation | | | Rates |  | 4 |
| Videos |  | 3 |
| Reflection |  | 7 |
| Tracking | | | By detection |  | +7 |
| Data+Reflection |  | +5 |
|  | **Total** | | | |  | 100 |

**Comments**

*Strong Points*

*Weak Points*