**Vehicle Re-Identification for Automatic Video Traffic Surveillance**

Training phase

Testing data

Trained HOG classifier

Trained Color Histogram classifier

vehicle image file

vehicle image file

vehicle image file

vehicle image file

Average color Histogram concatenated  
vector

vehicle image file

vehicle image file

vehicle image file

Average HOG Histogram concatenated Vector

1st round

2nd round

vehicle image file

vehicle image file

3rd round: Matching?

vehicle image file

vehicle image file

**+**

Re-identification phase

SVM

SVM

Color Histogram concatenated  
vector (4752 values)

HOG Histogram concatenated Vector (4347)

Feature Extractor

vehicle image file

vehicle image file

vehicle image file

vehicle image file

vehicle image file

vehicle image file

**-**

**-**

**+**

Training data

ML Algorithms

Thiết kế các hàm

1. Giai đoạn Training.

-**Training data**: Các cặp Positive(imageA, imageB), Negative(imageA, imageB) được chuẩn bị sẵn

-**Hàm** [ColorHistogramConcatVector, HOGHistogramConcatVector]=**fFeatureExtractor**()

% fFeatureExtractor: Nhận vào Training data, tính và trả về 2 tập vector ColorHistogramConcatVector, HOGHistogramConcatVector

Hàm này sử dụng hàm fColorHistConcatVector, fHOGHistConcatVector

-**Hàm** [ColorHistogramConcatVector] = **fColorHistConcatVector**(imgA, imgB)

% fColorHistConcatVector: Tính Color histogram feature vector concatenated từ 2 ảnh imgA and imgB, sử dụng cho quá trình training và quá trình regression

Hàm này sử dụng hàm fColorHistVector

-**Hàm** [ColorHistogramVector] = fColorHistVector(img)

% fColorHistVector: Tính Color histogram vector cho ảnh img

-**Hàm** [HOGHistogramConcatVector] = **fHOGHistConcatVector**(imgA, imgB)

% fHOGHistConcatVector: Tính HOG histogram feature vector concatenated từ 2 ảnh imgA and imgB, sử dụng cho quá trình training và quá trình regression

Hàm này sử dụng hàm fHOGHistVector

-**Hàm** [HOGHistogramVector] = fHOGHistVector(img)

% fHOGHistVector: Tính HOG histogram vector cho ảnh img

- **Hàm** [ColorSVMClassifier]=**fColorSVMTrain** (TrainingData)

- **Hàm** [HOGSVMClassifier]=**fHOGSVMTrain** (TrainingData)

2. Giai đoạn Re-identification.