11-775 Homework 3 Report

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In this homework, I did lots of experiments and tried both early fusion and late fusion.

The main steps of my experiments are as follows:

- Get all the development video labels for each event (take P001 as example):

```
cat dev | awk '{if ($2=="P001") {print 1} else {print 0}}' > P001_dev.label
```

- Copy all the raw features (take trajectory features as example):

```
cat MED10.trajectory_spbof.list | xargs -I % cp % ../raw_features/
```

- Write a script `scripts/trans_feature.py` to convert the features from sparse matrix into dense matrix.
- Write a script `combine.feature.sh` to do early fusion.
- Use Apple Numbers to do late fusion (simply get the average score of different features).

The mAPs before fusion are as follows:

Feature	P001 mAP	P002 mAP	P003 mAP
SIFT	0.206894	*0.576626*	***0.448174***
Trajectory	*0.362736*	0.545888	*0.278566*
STIP	0.331342	0.374435	0.181431
MoSIFT	*0.36817*	0.486313	0.199318
TCH	0.117643	*0.564515*	0.264602
MFCC	0.11878	0.219722	0.0884065

The mAPs by using early fusion are as follows:

Feature	P001 mAP	P002 mAP	P003 mAP
SIFT + Trajectory	0.339876	**0.579876**	0.358421
Trajectory + MoSIFT	**0.384129**	0.563888	0.259152
SIFT + MFCC	0.164796	0.348641	0.141144

The mAPs by using late fusion are as follows:

	P001	P002	P003
Features	SIFT + Trajectory + MoSIFT	SIFT + Trajectory + TCH	SIFT
mAP	0.423209	0.669657	0.448174