CRCV REU - Week 8

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Project Overview

- Project Team: Dr. Yogesh Rawat
- Real-Time Detection of School Bullying Using CCTV
- The project focuses on using deep learning and video activity recognition models to detect bullying behaviors in real time from school surveillance footage.

Problem

- Existing surveillance systems in schools are passive and rely on human monitoring, which is inefficient and prone to oversight.
- There is a lack of robust, real-time systems that can detect aggressive or bullying behaviors using visual input from CCTV cameras.
- Moreover, there is limited publicly available data tailored to the school bullying context, especially in natural school environments.

Dataset Curation Progress

- Existing datasets curated
  - UCF-Crime
  - RWF-2000
- Clips collected online
  - YouTube
  - Facebook
  - X
  - Instagram

Dataset collected

n/o	Classes	Number of videos
1	forceful choking	90
2	dragging a person	41
3	elbow strike	12
4	hair pulling	48
5	headbutt attack	8
6	hitting a person with an object	247
7	aggressive holding	288
8	kicking a person	296
9	punching a person	706
10	forceful shoving	430
11	slapping a person	119
	multi label	347
	normal	449
	TOTAL	**3081**

T2L video recognition model zero shot test

n/o	Classes	Accuracy
1	forceful choking	Top1: 5.555555555555555, Top5: 31.11111111111111
2	dragging a person	Top1: 0.0, Top5: 7.317073170731707
3	elbow strike	Top1: 0.0, Top5: 8.333333333333332
4	hair pulling	Top1: 2.083333333333333, Top5: 91.66666666666666
5	headbutt attack	Top1: 0.0, Top5: 100.0
6	hitting a person with an object	Top1: 0.404858299595141 7, Top5: 46.558704453441294
7	aggressive holding	Top1: 0.6944444444444444, Top5: 5.555555555555555
8	kicking a person	Top1: 2.364864864864865, Top5: 59.797297297297305
9	**punching a person**	**Top1: 41.21813031161473, Top5: 99.0084985835694**
10	forceful shoving	Top1: 0.23255813953488372, Top5: 20.46511627906977
11	slapping a person	Top1: 1.680672268907563, Top5: 68.90756302521008

Next Steps

- Zero shot test on ActionClip and OVIS model
- Analysis on the three models' performance on the dataset
- Add more classes to the dataset
- Train and test models