CS 763 (Computer Vision)
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IIT Bombay

Group Members:
160050009 Sourabh Tote
160050050 Akshay Patidar
160110045 Shashank Batra

End Goal

To detect and localize abnormal behaviors in crowd videos using a joint detector of temporal (eg. sudden or abrupt movements) and spatial anomalies (eg. presence of a strange entity). The proposed detector is based on a video representation that accounts for both appearance and dynamics, using a set of a mixture of dynamic textures models.

Existing Literature

- Anomaly Detection and Localization in Crowded Scenes by W. Li, V. Mahadevan, and N. Vasconcelos **[Primary Reference]**
- Abnormal Crowd Behavior Detection using Social Force Model by R. Mehran, A. Oyama, and M. Shah **[Might consider using certain heuristics or ideas from this]**
- Deep-Anomaly: Fully Convolutional Neural Network for Fast Anomaly Detection in Crowded Scenes by M. Sabokroua, M. Fayyazb, M. Fathyc, Z. Moayedd, and R. Kletted **[Under consideration, Will be using the datasets used by this paper]**

Datasets Available

- http://www.svcl.ucsd.edu/projects/anomaly/UCSD_Anomaly_Dataset.tar.gz - UCSD anomaly detection dataset.
- http://crcv.ucf.edu/projects/Abnormal_Crowd/Normal_Abnormal_Crowd.zip - CRCV dataset for normal abnormal crowds.
- http://vision.eecs.yorku.ca/research/anomalous-behaviour-data/ - Website dedicated to the collection of data for detection of anomalous behaviour in videos.

Implementation Plan

- **February**
  - Reading the paper and understanding it to get a thorough idea of the problem statement and the solution proposed.
  - Procuring the datasets and deciding the architecture necessary for running the training.

    - Performing Data-preprocessing and beginning the implementation of the paper.
- **March**
    - Completing the implementation of the solution.
    - Considering heuristics and ideas from other papers.
    - Training the model implemented on at least 2 datasets.
- **April**
    - Training on other datasets (if time permits).
    - Considering some more ideas or heuristics (if time permits).
    - Evaluation of the project, fine-tuning the parameters. Comparison of the results with other methods proposed.
    - Report preparation.
