



### C11 Video Datasets for Developing Image Forensic Techniques

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After attending this presentation, attendees will better understand two newly constructed video datasets that will accelerate the development of various image forensic techniques, as well as contents and applications of the datasets.

This presentation will impact the forensic science community by announcing newly constructed datasets to evaluate image forensic techniques, especially for suspicious activities detection and forgeries detection. The fact that novel datasets were constructed will be beneficial information for forensic image analysts.

Improvement of video and image analysis techniques have provided significant benefits for information analysis in various fields such as prevention and investigation of crimes and terrorism. In order to drive development of such analyzing techniques that assist public safety and security, this study constructed two types of video datasets so practical technique evaluations and comparisons can be made. The datasets presented are: (1) a dataset of crowds and suspicious activity videos; and, (2) a dataset of forgery videos. These were created based on factors such as experiences with a variety of forensic image analyses. It is thought that these datasets are helpful for furthering research in this area and for the efficient social implementation of various novel video and image analysis techniques. It is planned that these datasets will become available for researchers by the conclusion of a joint research contract. A brief overview of each dataset is described in the following sections.

The first section is a set of videos containing crowds of people and a few suspicious activities happening in the crowds. This set seeks to drive the development of techniques for detecting suspicious activities from videos. Five situations, including a sightseeing spot, a sports stadium, and a meeting place such as a station, are assumed and up to 100 extras appear in the videos. In the videos, nearly all people in the crowds behave typically, but some are engaged in suspicious activities. Each scene was shot by three to four High-Definition (HD) -resolution cameras and one spherical camera from different angles simultaneously. Suspicious activities are defined based on comments from police officers and embedded into the scenarios. Annotation data is also provided.

The second section is a set of forgery videos. This set contains material videos that are used to make forgeries as well as six types of forgeries. The goal of this set is to further development of techniques for detecting forgeries in videos. In the videos, for example, removing a person or tampering with a traffic light color are performed as forgeries. One of the remarkable points of this set is that approximately 40–50 seconds of each video is tampered with. Furthermore, as the quality of forgery videos is significantly affected by the technical level of the forger, each forgery type of this set contains tampered videos with three different levels of technical quality from expert level to amateur level of forgery using the same materials.

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#### **Suspicious Activity Detection, Forgery Detection, Video Dataset**