Pinto: Enabling Video Privacy for Commodity IoT Cameras

Pinto is a software based solution that provides us with privacy protected, forgery proofed surveillance footage.

Pinto allows:

1. Recording a real time video stream at a fast rate
2. Allowing post processing for privacy protection prior to video sharing
3. Keeping their original, real time signatures valid even after privacy protection(i.e. Blurring of sensitive data such as faces or number plates)

Summary:

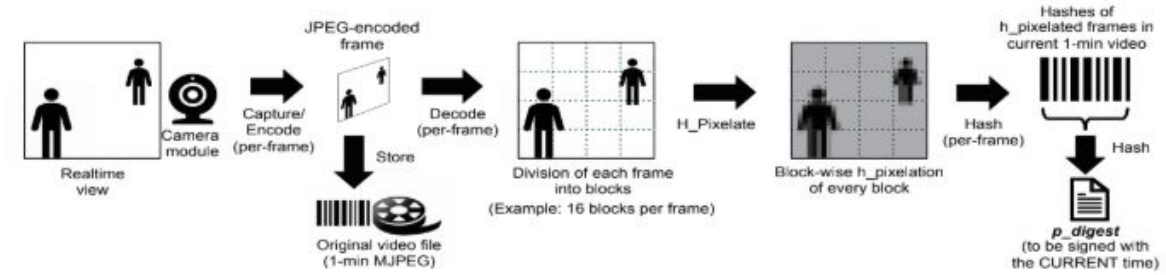
Privacy is a major concern now a days. Devices such as surveillance cameras or dashcams are a good source of surveillance but on the other hand they also breach the privacy of other people. These cameras record the video without the consent of the people being recorded. However, protecting visual privacy without losing video authenticity is challenging. The conventional post-process blurring would open the door for posterior fabrication, whereas the real time blurring results in poor quality

So a need of such software was felt which enables real time recordings but also pixelates the sensitive information so that no one other than the owner of the camera gets access to that info. If someone wants access to the recording, they will receive a pixelated output thus ensuring the privacy.

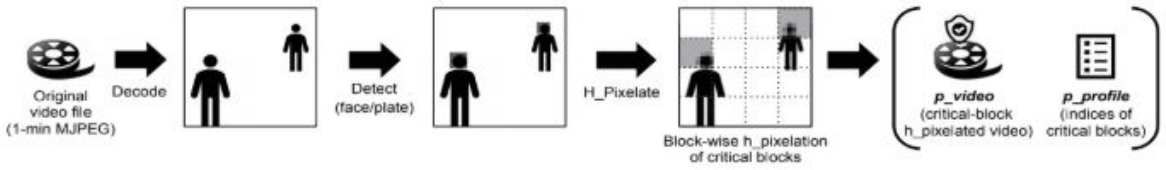
The forgery protection is achieved by digitally signing the hash of the recording from a time stamping authority and verifying it later when the recording is requested. Privacy protection which is basically pixelating the sensitive data is performed later at the time when a person requests access to the recording. This post processing allows fast real time video processing at the time of recording.

Sample Output

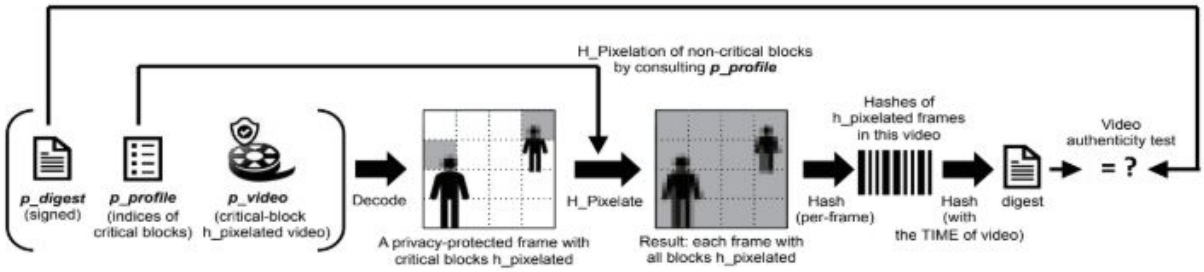
Methodology



(a) **Realtime processing in camera device (at the time of recording).**



(b) **Post processing (prior to sharing of a video).**



(c) **Verification of video authenticity (at the requester-side).**

Acknowledgement:

Yu, H., Lim, J., Kim, K., & Lee, S. B. (2018, October). Pinto: Enabling Video Privacy for Commodity IoT Cameras. In *Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications Security* (pp. 1089-1101). ACM.