Building Efficient Wearable Camera Systems for Public Safety Surveillance

xxxx
Department of Computer & Information Sciences
Temple University, Philadelphia, PA, USA
Email: {xxx}@temple.edu

***Abstract*—**

I. Introduction

- para 1. Cameras fast becoming ubiquitous, e.g. smartphones, glasses.

- para 2. Uploading images and videos from these devices in real time remains a challenge. Existing wireless network do not have sufficient capacity. Give example, a 10 min, low res. video will take xxx minutes under good conditions.

- para 3. Why this is a problem? Limited network capacity means that we cannot make timely use of captured data because we cannot collect them in real time for analysis.

- para 4. What do we do? We consider a scenario for wearable cameras. Describe our problem setting

- para 5. Our main contributions are what

- para 6. Rest of the paper is as follows

II. Related Work

- shoot for about 20-30 citations

III. Wearable

The entire system consists of three major hardware components, two of which are to be local on the body of the user. The two local components consist of a wearable pair of Google Glasses and a Samsung Galaxy Nexus phone both of which run Android Version 4.2.2. The third component consists of a server that will store information sent to it from the phone over wireless.

In every configuration of our system the Google Glass is responsible for recording the video that will then later be processed by OpenCV. The video that is recorded will be then sent to the Android Phone via a configured Ad Hoc 802.11 wireless network hosted on the Android Phone for processing and then ultimately sent via wireless again to the storage server. The specifics about which device video processing takes place depends on the configuration of the system. For example processing can take place only on the phone as seen in figure 1 or can be split between the two as seen in figure 2.

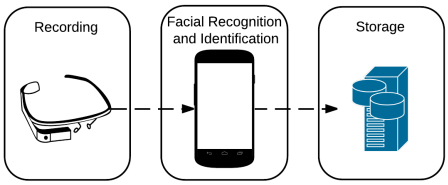

Fig. 1. Single mode processing.

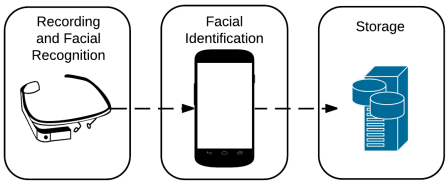

Fig. 2. Mixed mode processing.

- describe how openCV works on phone
- describe how alternative system designs
- each of the above is about 2-3 paragraphs.

IV. Evaluation

A. Experimental setup

Video was captured and analyzed via the Google Glass using the built in camera library. The videos once recorded were stored on the internal storage space located on the Glass and then sent via 802.11 wireless to an Android phone. The Android Phone used in this experiment is the Samsung Galaxy Nexus phone running a stock version of the Android OS. This device was used to host the wireless network, process the video sent to it, and finally to send the results to the database server. Information about each device can be seen in table IV-A.

Test data consisted of two sets of video recording sessions. The first session was recorded in both sunlit daylight and dusk

Device	OS	CPU	Memory	Storage	Wireless
Google Glass	4.2.2				
Nexus Phone	4.2.2				

TABLE I
HARDWARE SPECIFICATIONS

at a variety of video qualities and settings. Table **??** displays information about all of the videos that were recorded.

Glass Video Profile	Video Resolution	Audio Quality
Low Quality/QCIF	176x144	fill in
CIF	348x288	fill in
420p	720x480	fill in
High Quality/720p	1280x720	fill in

TABLE II
GOOGLE GLASS VIDEO QUALITY

of video recorded at different quality settings for a variety of durations. The physical location for the video recording used to analyze the facial recognition portion of the experiment was done

- para 2. How we collect the test data

- para 3. What are our key metrics, and why are they important.

B. Results

- 1 result/set of graphs per paragraph.

V. CONCLUSION