Robust Face-Name Graph Matching For Movie Character Identification

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Abstract- The main aim of the project is to design "Robust Face-Name Graph Matching for Movie Character Identification". Automatic face identification of characters in movies has drawn significant research interests and led to many interesting applications. It is a challenging problem due to the huge variation in the appearance of each character. Although existing methods demonstrate promising results in clean environment, the performances are limited in complex movie scenes due to the noises generated during the face tracking and face clustering process. In this paper we present two schemes of global face-name matching based framework for robust character identification. The contributions of this work include the following. 1) A noise insensitive character relationship representation is incorporated. 2) We introduce an edit operation based graph matching algorithm. 3) Complex character changes are handled by simultaneously graph partition and graph matching. 4) Beyond existing character identification approaches, we further perform an in-depth sensitivity analysis by introducing two types of simulated noises. The proposed schemes demonstrate state-of-the-art performance on movie character identification in various genres of movies.

Keywords – —Character identification, face alignment, feature extraction, feature matching

I. INTRODUCTION

The proliferation of movie and TV provides large amount of digital video data. This has led to the requirement of efficient and effective techniques for video content understanding and organization. Automatic video annotation is one of such key techniques. In this paper our focus is on annotating characters in the movie and TVs, which is called movie character identification. The objective is to identify the faces of the character in the video and label them with the corresponding names in the cast. The textual cues, like cast lists, scripts, subtitles and closed captions are usually exploited. In a movie, characters are the focus center of interests for the audience. Their occurrences provide lots of clues about the movie structure and content. Automatic character identification is essential for semantic movie index and retrieval, scene segmentation, summarization and other applications.

- *Existing Method*

The existing face identification system will make use of any camera which is interfaced to a micro controller of any type. The main disadvantage of this type of systems is they will continuously capture the images from the movie, but it will not check whether any object or person or any other thing is present in that image. So it will cause wastage of power of the total face identification system and at the same time wastage of the memory used to store the data base of the captured image or video.

- *Disadvantages of Existing System*

In the existing method we can continuously capture the images by using camera, but we are not finding out the person or object or any other thing is present in the image and also wastage of memory is more by storing the captured image or video.

II. PROPOSED ALGORITHM

The proposed method is used to overcome the drawback present in the existing system. Our system is designed by using ARM 32-bit micro controller which supports different features and algorithms for development of face-graph matching. The webcam combines video sensing, video processing and communication within a single device. This

captures image provides input to controller through USB port then internally checks recognized faces with predefined face then based on that again name is displayed on display unit connected to it.
First input video is considered which undergoes face clustering to just identify faces using face clustering then it make face graph then after that internally it make names graph then name corresponding to face name will be displayed on display unit.

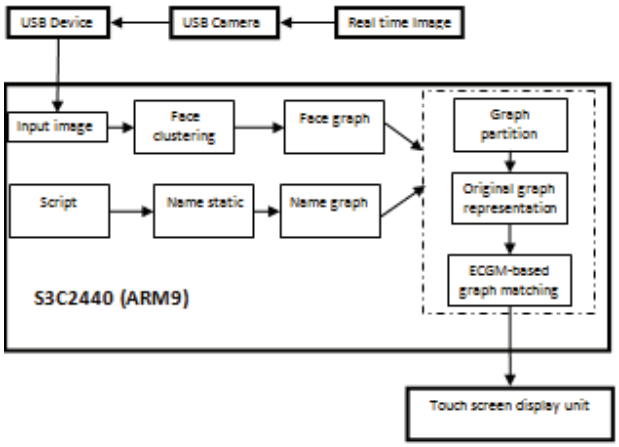

Figure 1. Block Diagram

III. Experiment and Result

The proposed movie character identification makes use embedded board which makes use of less power consumptive and advanced micro controller like s3c2440. S3c2440 is a Samsung company's microcontroller which is designed based on the structure of arm 920t family. This microcontroller works for an voltage of +3.3v dc and at an operating frequency of 400 MHz, the maximum frequency up to which this micro controller can work is 533 MHz.
We cannot get s3c2440 microcontroller individually. We will get it in the form of friendly arm board otherwise we can call it as mini 2440 board.
In order to work with ARM 9 micro controllers we require 3 things. They are as follows.

1. Boot Loader
2. Kernel
3. Root File System

- *Boot Loader*

The main functionality of boot loader is to initialize all the devices that are present on the mother board of MINI 2440 and at the same time to find out whether any problem or any other fault is there in the devices that are present on that mother board of MINI 2440.
The other feature of the boot loader is to find out what are the different operating systems that are present in the standard storage devices and to show it on to the display device so that user can select between the operating systems into which he wants to enter.
One other feature of the boot loader is to load operating system related files byte by byte into the temporary memory like RAM. In our current project we are using boot loader like Super vivi which is MINI 2440 specific.

- *Kernel*

The core part of an operating system we can cal like kernel. Operating system will perform its functionalities like File management, Process management, Memory management, Network management and Interrupt management with the help of the kernel only. Kernel holds the device related drivers that are present on the motherboard. Friendly arm board supports for operating systems like symbion, android, embedded Linux, win ce but in all these operating systems embedded Linux will provide high security to drivers and files. so in our current project we are

making use of kernel of embedded Linux with which device related drivers that are present on the mother board of friendly arm board will automatically come when we load embedded Linux related kernel.

- *Root File System*

File system will tell how the files are arranged in the internal standard storage devices. In embedded Linux, kernel treats everything as a file even the input and output devices also. In embedded Linux, Root is the parent directory it contains other sub directories like dev, lib, home, bin ,sbin ,media ,mnt ,temp ,proc , etc, opt and etc. According to our application we will interface some external devices also. All the devices means internal devices that are present on the motherboard of MINI 2440 will get their corresponding drivers when we load Embedded Linux related kernel. But these device drivers require micro controller related header files and some other header files which will be present in the lib directory which is present in the root directory. And also the devices related drivers will be present in the dev directory which is again present in the root directory. So whenever we will load the Root File System then we will get different directories which will be helpful to the kernel. So compulsorily we need to load the Root File System. MINI 2440 specific Root File System is Root Qtopia.
The essential programs that are required in order to work with MINI 2440 like Boot loader, Embedded Linux related Kernel, Root File System will be loaded into the NOR flash which is present on the MINI 2440 board itself. The program that is related with the application will be loaded into NAND flash which is also present on the MINI 2440 board itself. By using boot strap switch that is present on the MINI 2440 will help the user to select either NOR or NAND flash. After that by using DNW tool we can load Boot loader, Embedded Linux related kernel and Root File System into NOR flash by using USB cable and the application related program into NAND flash.
Once loading everything into MINI 2440 board it starts working based on the application program that we have loaded into the NAND flash.
This system captures the image from web camera connected to ARM microcontroller through USB and the image is processed by using image processing technique. Image processing is any form of signal processing for which the input is an image, such as a photograph or video frame, the output of image processing may be either an image or a set of characteristics or parameters related to the image. In this system we can store our own images by using train key along with controller stores the names to related images and after storing the images we can identify person from movie when camera captures person from the movie comes in front of camera. Identified person image and its name are displayed on display unit (touch screen).

- *Startup Mode Selection*

To choose the development board startup mode, S2 DIP-switch is determined,
Depending on the target board tips.
Switch S2 to _NOR" side logo, the system will start with the NOR flash.
Switch S2 to _NAND" side logo, the system will start with the NAND Flash.
The NOR Flash and NAND Flash of the development board has been burned into the
Same BIOS from factory (because the BIOS at the same time support for both flash, just after the boot of different manifestations, please refer to "development board BIOS feature and use that"), S2 has been receiving side of NAND flash, the system boot from a startup operation of NAND flash system.

IV.CONCLUSION

The project “Robust Face-Name Graph Matching for Movie Character Identification” has been successfully designed and tested. It has been developed by integrating features of all the hardware components and software used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced ARM9 board and with the help of growing technology the project has been successfully implemented.

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