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AUTOMATIC FUTURE PREDICTION SYSTEM USING PALM PRINT IMAGES

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Abstract— This system presents an application of digital image processing which can be useful in palmistry domain to predict character of people or their future life. Palmistry prediction system is developed based on edge detection and recognition. Morphological operation is also applied in this developed system. The system applies canny edge detection algorithm on the input images to identify certain features in the image and extract principal lines from image of human palm. The major line patterns in palmistry are summarized to become the models for fortune telling through palm reading. By using knowledge base of palmistry, it matches certain features in images and shows the predictions.

Keywords— Palm Print, prediction, canny edge detection, hough transform, palmistry prediction.

I. INTRODUCTION

Today, people attempt to use Palmistry to learn about their current life and what may be in their future. The human palm best reveals the story of the human life in the past, present and future. Many ancient civilizations study mankind through the hands: their shape, their texture, and the lines within them. Palmistry is a science which observes human palm by different aspects and derives conclusions about nature of the person. Palmistry is used to help give people direction in life and to shed light on personal issues like health, finances and family. A palmist can tell you about yourself in order to help you take control of your future.

The digital computer can perceive the image from various peripheral devices and analyse it. The techniques used to provide perception to digital computer are called image processing. Instead of traditional face-to-face palm reading, this palmistry prediction system is where the users submit their hand images and get the predictions immediately. Palm detection is also applied in different areas like personal identification and authentication, Gesture Recognition, etc. This system aims to study the image processing technologies, especially canny edge detection algorithm and to learn characteristic of palm print. Palm print is one of the relatively new physiological biometrics due to its stable and unique characteristics.

The rich texture information of palm print offers one of the powerful means in personal identification and verification. Biometric palm print recognizes a person based on the

principal lines, wrinkles and ridges on the surface of the palm. These line structures are stable and remain unchanged throughout the life of an individual. The inner surface of the normally contains three flexion creases, secondary creases and ridges. The flexion creases are also called principal lines and secondary creases are called wrinkles. The flexion and the major secondary creases are formed between the 3rd and 5th months of pregnancy [2] and superficial lines appear after we born. Although the three major flexions are genetically dependent, most of other creases are not [3]. Even identical twins have different palm prints. These non-genetically deterministic and complex patterns are very useful in personal identification. Human beings were interested in palm lines for fortune telling long time ago. Scientists know that palm lines are associated with some genetic diseases including Down syndrome, Aarskog syndrome, Cohen syndrome and fetal alcohol syndrome [4]. Scientists and fortunetellers name the lines and regions in palm differently shown in Fig. 1 [5].

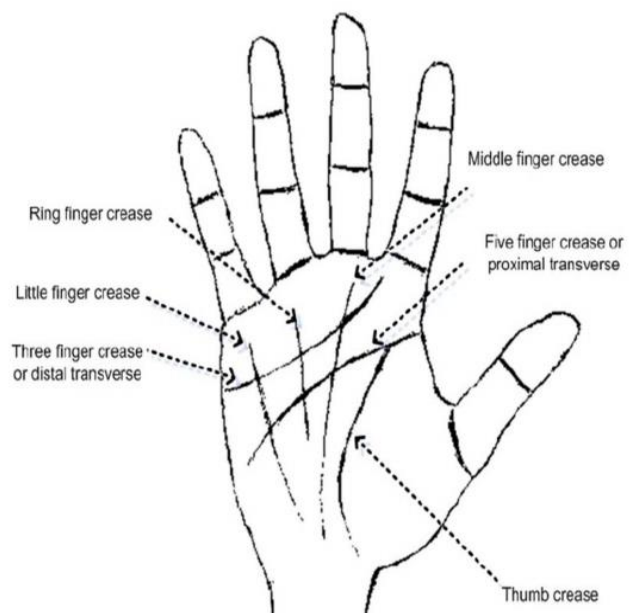


Fig. 1. Definitions of palm lines and regions from scientists

The rest of the paper is organized as follows: Section II reviews palm print and the proposed system is shown in Section III, Section VI lists identification and verification system of the palm print. Finally, the conclusions are presented in Section V.

II. PALMPRINT

There are two types of palm print recognition research, high resolution and low resolution approaches. High resolution approach employs high resolution images while low resolution approach employs low resolution images. High resolution approach is suitable for forensic applications such as criminal detection [6]. Low resolution images are more suitable for civil and commercial applications such as access control. Generally speaking, high resolution refers to 400 dpi or more and low resolution refers to 150 dpi or less. Fig. 2. illustrates a part of a high resolution palm print image and a low resolution palm print image.

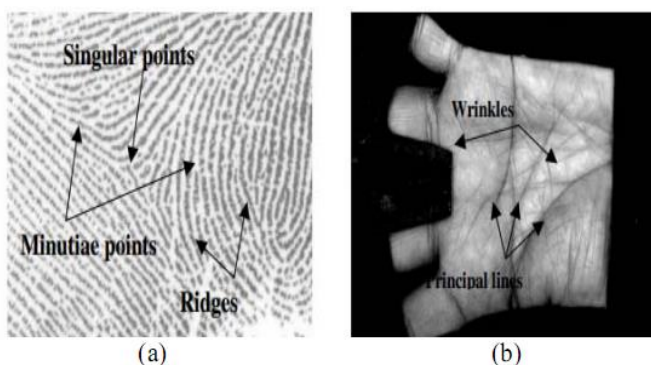


Fig. 2. Palm print features in (a) a high resolution image and (b) a low resolution image

In high resolution images, researchers can extract ridges, singular points and minutia points as features while in low resolution images, they generally use principal lines, wrinkles and texture. At the beginning of palm print research, the high-resolution approach was the focus [7-8] but almost all current research is focused on the low resolution approach because of the potential applications. In this paper, we concentrate only on the low resolution approach since it is the current focus. For civil and commercial applications, low-resolution palm print images are more suitable than high-resolution images because of their smaller file sizes, which results in shorter computation times during preprocessing and feature extraction. Therefore, they are useful for many real-time palm print applications [9].

There are three key issues to be considered in developing palm print identification system.

(1)Palm print Acquisition: How do we obtain a good quality palm print image in a short time interval, such as 1 second? What kind of device is suitable for data acquisition?

(2)Palm print Feature Representation: Which types of palm print features are suitable for identification? How to represent different palm print features?

(3)Palm print Identification: How do we search for a queried palm print in a given database and obtain a response within a limited time?

So far, several companies have developed special scanners to capture high-resolution palm print images [10, 11]. These devices can extract many detailed features, including minutiae points and singular points, for special applications. Although these platform scanners can meet the requirements of on-line systems, they are difficult to use in real-time applications because a few seconds are needed to scan a palm. To achieve on-line palm print identification in real-time, a special device is required for fast palm print sampling [9].

Palmistry or chiromancy is the claim of characterization and foretelling the future through the study of the palm, also known as palm reading. The practice is found all over the world, with numerous cultural variations. It has been practiced in the cultures of India, Tibet, China, Persia, Sumeria and Ancient Israel. Chiromancy consists of the practice of evaluating a person's character or future life by "reading" the palm of that person's hand. Various "lines" ("heart line", "life line", etc.) and "mounts" (or bumps) (chiromancy) purportedly suggest interpretations by their relative sizes, qualities, and intersections. The following figure 3 shows the features of the palm print.

A. Chiromancy

This is the study of the lines within the palm. The lines in the palms are formed during the foetal development and best carry the personality traits and characters of the individual. This was palmistry in olden ages. Later the various marks and mounts on the palm also came into study and focus.

B. Chiromancy

The study of the general shape of the hand, finger shapes, finger nails and their texture is termed as Chiromancy. This study is helping in finding out the true personality of the individual under study.

C. Dermatoglyphics

The study of the ridges found in the finger tips is called Dermatoglyphics. This is very useful in criminal/forensic sciences and is nowadays used as a personal identification tool.

D. The life line

The line on the palm that people are most curious about is the life line. This line begins between the index finger and the thumb and continues downward toward the base of the thumb and the connection to the wrist. A common misconception about the life line is that it reveals how long you will live or

when you will die. It does however, reveal information about the encounters in your life, relationships with others, health and physical and emotional well-being.

E. The heart line

The heart line, also known as the love line or mensal line, gives an indication about a person's emotional state and their emotional and physical relationships with others. It can also be looked at as a predictor of the health of the heart. This line is located above the head line and life line. It starts either under the index finger or middle finger, and extends toward the pinky finger.

F. The fate line

This line is also known as the line of destiny. This line reveals the effects that people and events have had on an individual. These are events that the person has had no control over. This line is tied to one's life path. It is also an indication of obstacles that may be faced, educational and occupational choices, accomplishments, achievements and how content an individual is with his life. This line also denotes a personality that can be strong, however, it may indicate struggles that may get in the way of success. If there are breaks in the line, hard luck, loss or failure in life can happen.

G. The head line

The head line, also known as the wisdom line (considered one of the most important lines in Chinese palmistry), reveals mental and psychological makeup and intellectual development and intuitive abilities. This line begins just above the life line, between the thumb and the index finger and runs across the palm toward the other edge of the palm horizontally. Sometimes the head line begins directly on the life line and extends out from there. This means that you have a strong will- mind over matter. Forked lines are sometimes called the writer's fork or the lawyer's fork.

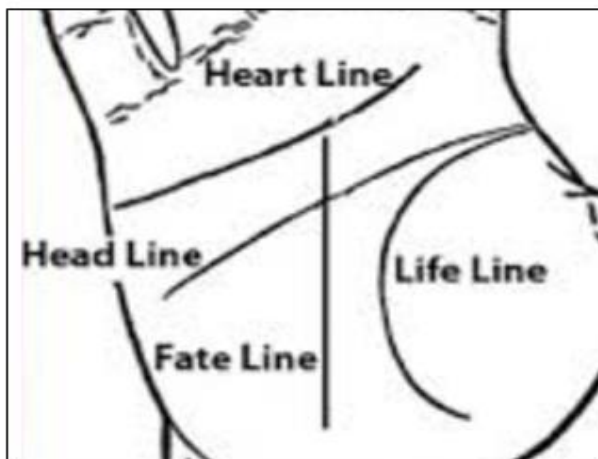


Fig. 3. Palm print features (heart line, head line, life line and fate line)

III. PROPOSED SYSTEM

This system is predicted by reading primary lines of palm image. The administrator constructs the palmistry prediction model by linking prediction with standard shapes of primary palm lines. Figure 4 shows the overall system flow diagram of the system.

The user needs to upload the capture image of their palm and upload to the system. This system is converted the uploaded colour image to gray scale colour image and detect the primary lines of the palm image. Then, detected primary lines of the palm image are extracting and measure the angle, length, and slope of the primary lines.

Finally, the system matches the extracted lines with palmistry prediction model and show the matched prediction result to the user.

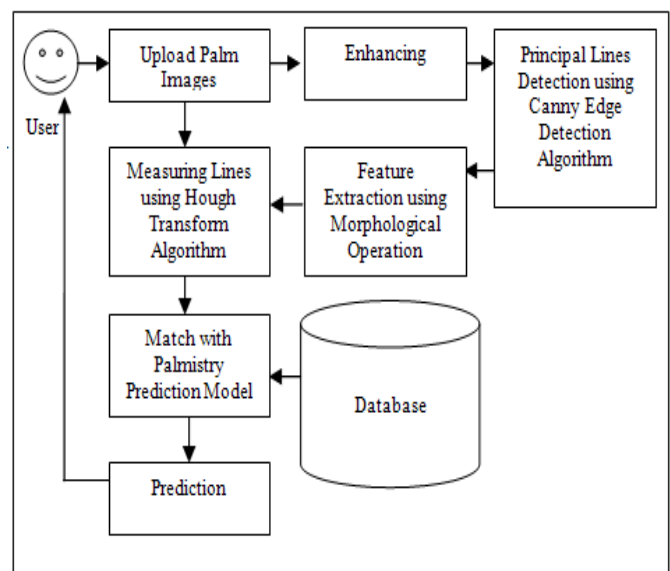


Fig. 4. The system flow diagram of the future prediction by palm print recognition

IV. CONCLUSION

This efficient system is extracted the principle lines from human palm using Canny edge detection algorithm. Using the palmistry concepts, the system is designed which produces the predictions that may occur to the human being in the future. The Canny algorithm is adaptable to various environments. Its parameters allow it to be tailored to recognition of edges of differing characteristics depending on the particular requirements of a given implementation. Prediction on other lines and special symbols from the rest of the palm is future work.



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