

What can the structure of the palmprint tell us?

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Abstract— Since the olden days, palmistry has been used to foretell a person's character traits and fate. The study of various lines and mounts of the palm helps the reader predict the person's future. As research on palmprints progresses, there had been more uses of it being discovered, such as health prediction. These researches surface the need to further identify and make use of the mysteries of the palm. This paper aims to understand the different researches and its methods in disseminating the information for fortune telling and health prediction palmistry. With these understandings, the possibility of creating a database and query system for fortune telling and health prediction information is explored.

Keywords— component; palmistry; palm reading; health prediction; fortune telling

I. INTRODUCTION

The study of palms and its prints is continually growing today. They are more commonly used in conjunction with fingerprints for verification and identification purposes. This allows more accurate results being produced as compared to just using fingerprints.

A. History of palmprint and its uses

Throughout the vast human history, there are few methods of identifying oneself individually and palmprint is one of them that is still in use up till today. Palmprint recognition is possible due to the different unique ridges and lines that are on a person's palm that makes one uniquely identifiable from the others. This is like the fingerprint of a person where each ridge on the finger is unique to the person. Furthermore, palmprint covers more skin area and therefore, results in lesser number of falsely positive results as compared to using fingerprints alone, as seen in [1].

B. Fortune Telling

Beside the use of palmprint for identification, palmistry or chiromancy is another area that is widely used and believed in since the olden days. Palmistry, the art of foretelling one's future and character, is carried out throughout the world with some varying differences as in [2]. It is a common practice where its roots are traced back to India and it was spread to China and Europe. It is believed that through the various line patterns and mounts of the palm, specific information about a person's life can be revealed and predicted. It is also possible to predict various aspects of the person's future and character from observing the structure of the palm and its features. However, due to the lack of real substantial evidence, there are people dismissing the reading as superstitious. Although some people are sceptical in believing the predictions foretold by reading one's palms, the influence of palmistry in fortune reading still holds strong in the world, especially in the Asian countries.

C. Health Prediction

Health prediction or making medical diagnosis based on a person's palm is another area that is increasing in findings. A

person's health conditions can be revealed through the information provided by their palms as discussed in [3] and [4]. The colors of the palm and its fingers help to tell the blood circulation and body condition of the person while the palm lines provide patterns that can be compared to past findings in predicting the illnesses. These features, in addition to the mounts of the palms, help to verify a person's health condition. This is beneficial for observing illnesses as it saves time and effort and provides insights on further studies of the person's health

In Traditional Chinese Medicine (TCM), the palm reading is embedded with the yin-yang theory, five elements theory and the eight trigrams theory as shown in [5]. Through the study of the patient's palms, practitioners of TCM can learn of the patient's state of the body. The hand colour, veins and fingernails are some features that TCM practitioners pay attention to. Furthermore, the lines and ridges of the palm do not change in size or shape throughout a person's life. Thus, it is also used in dermatoglyphic studies in getting information of the person's health conditions.

II. CURRENT METHODS

As Science and Technology advances, there are more researches that have been done to discover the mysteries of the palms. More communication methods are also developed to spread this information. In this paper, we will be discussing some of the web-based methods that are used to spread these information to the public.

A. Fortune Telling

In fortune telling, the information available online is plentiful. Therefore, one just need to carry out a search on the web engine to find the different meanings of the lines on the palm. However, many of the searches leads to webpages that have an interface that is not user-intuitive. They firstly list down the different lines of the palms and then proceed to explain the meaning of each line and what the different features of the line meant.

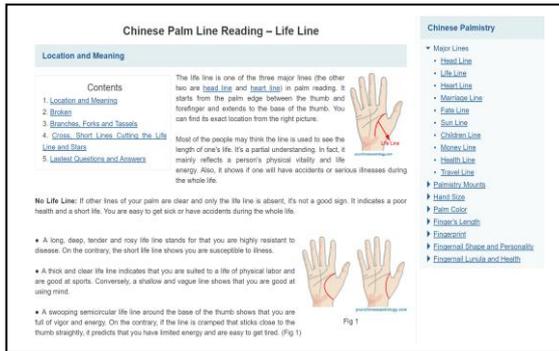


Figure 1. Webpage displaying fortune telling Palmistry in [6]

These websites provide an avenue for the users to have plenty of information of the lines. However, the information is too much and lead to the general users having a huge information overload and it is not easy to find the fortune that they want to foretell. This is due to the information being classified according to the line names and not the fortune itself.



Figure 2. Webpage using questions for palm reading in [7]

Other websites allow a better user experience by asking relevant questions about the user's palm to foretell the future as shown above. These websites are much simplified and provides minimal information of the lines. This provides the user easier usage but it does not explain the fortune of the user until the reading results are obtained. Furthermore, the user has no idea if the line that he is describing is pertaining to the fortune area that he is seeking. For example, if he is trying to foretell his career future, the questions asked might be related to his love line instead.

B. Health Reading

As often than not, when people thought of palmistry, they will think of palm reading in fortune telling. It is a lesser known fact that palm can be used to make a prediction of the health condition of the owner. Therefore, despite the troves of research results available online, there are much lesser websites that deals with health prediction palmistry, and most of them are TCM-related information. This is due to the findings of relationships between palms and illnesses such as Parkinson's disease in [8] and Schizophrenia in [9], are lesser known.

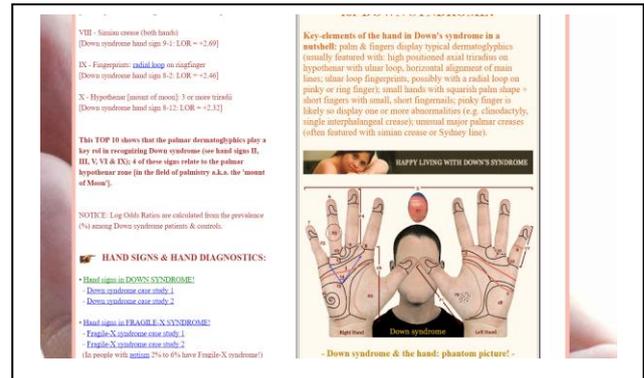


Figure 3. Webpage showing health prediction information in [10]

Figure 3 shows an attempt for health prediction of Down Syndrome as shown in [10]. It provides information that details how to tell if a person is having Down Syndrome and includes a picture to illustrate their meanings. However, the paragraph contains various terms that are not easily understood by the general users and the website does not contain a user-friendly interface that allows ease of usage for health prediction. In addition, its information is extremely limited to one illness, the Down Syndrome.

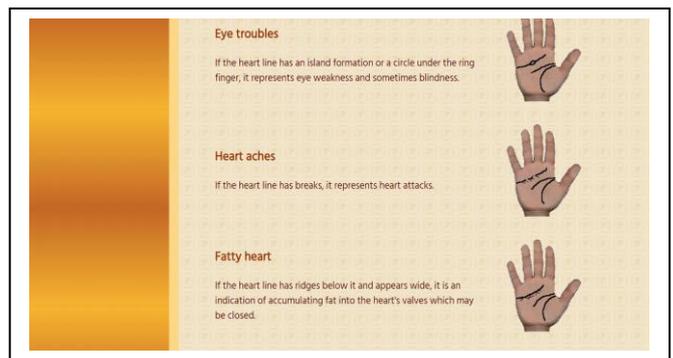


Figure 4. Webpage showing other health prediction palmistry in [11]

Websites that provide broader illness coverage for health prediction lack a user-intuitive interface and details. As seen in Figure 4, although this website in [11] provides insights into some health conditions such as eye troubles, heart aches and even fatty heart, their information are severely lacking in detail. More details are required to be supplemented in their website with their readings. In addition, the website is not user-friendly in terms of searching for illness or searching for features on the palm.

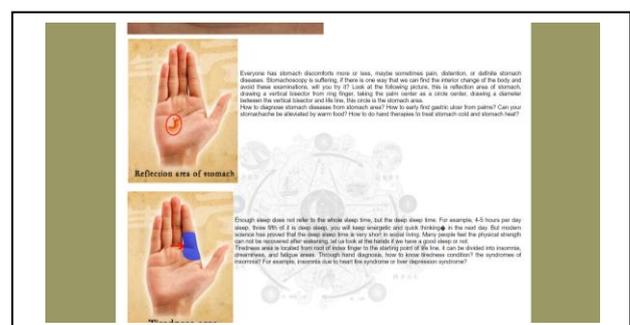


Figure 5. Webpage that covers TCM health prediction palmistry in [12]

Using palms as part of the diagnosis for health has always been used in Traditional Chinese Medicine (TCM) approach as discussed in [12]. Using palms, various health conditions can be told from the lines, ridges, mounts, colors and even the shape of the palm itself.

As seen in Figure 5, a website tried to explain the different areas of the palms and what it signifies. With a pictorial aid and descriptions, it assists the users in understanding the prediction of their health. However, the information is not presented clearly as a user need to trawl through the whole webpage to look for one illness. Furthermore, it is still lacking in coverage area as it focuses on only several illness and health problems.

Although there are plenty of findings in relation to using palmprints for health prediction, the lack of a user-intuitive interface and comprehensive database makes the information quite out of reach to the general users.

III. RESEARCH FINDINGS

A. Fortune Reading Palmistry Current Researches

Regarding the researches into fortune reading for palmistry, 8 major lines for fortune telling is identified for use in the creation of the database. They are the Head Line, Heart Line, Life Line, Fate Line, Sun Line, Money Line, Marriage Line and Health Line. These 8 lines are chosen to be included for the database for our purpose. This is due to their close relation to the fortunes that people usually will want to know, which are Love, Wisdom, Career, Health, Vitality, Success and Wealth as shown in Figure 6.

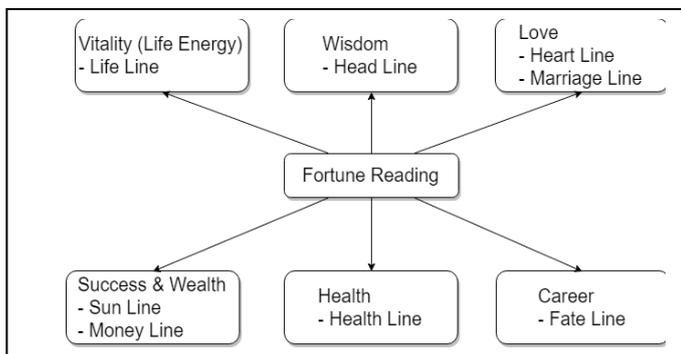


Figure 6. Overview of areas and their corresponding lines

B. Health Prediction Palmistry Current Researches

For the Health prediction database, there is an overview database that is completed by our previous group of researchers and is discussed in the next section. This database can be similarly used for our current purpose. In addition to the illnesses the previous group have covered, there will be additional information and diagnosis added into the database to make it more comprehensive. The 2 illnesses that are added and are more prominent will be highlighted as below. These 2 illnesses are already implemented into complete systems by previous groups of researchers and are also discussed in the later sections. Thus, by adding them into the database, it will improve the comprehensiveness of the database and at the same time, provide a gateway to their systems.

C. Schizophrenia

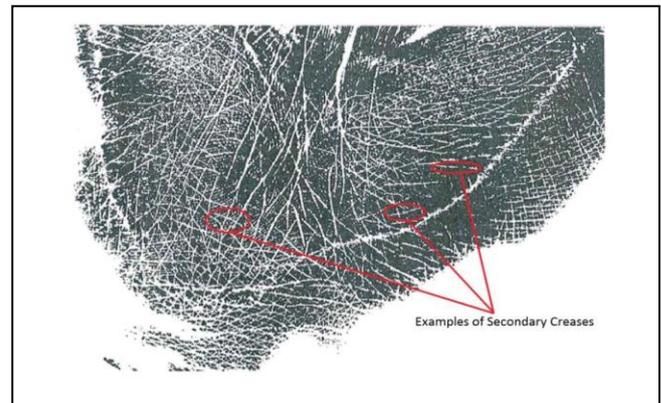


Figure 7. Schizophrenia Symptoms in [13]

This is a mental disorder characterized by abnormal social behavior and failure to understand what is real. Some of the symptoms that are associated with this illness include delusions, hallucinations, disorganized speech, disorganized behavior and other negative symptoms. The features on the palm that indicate this illness are the presence of high density of secondary creases on their lower palm as discussed in [13].

D. Parkinson's disease

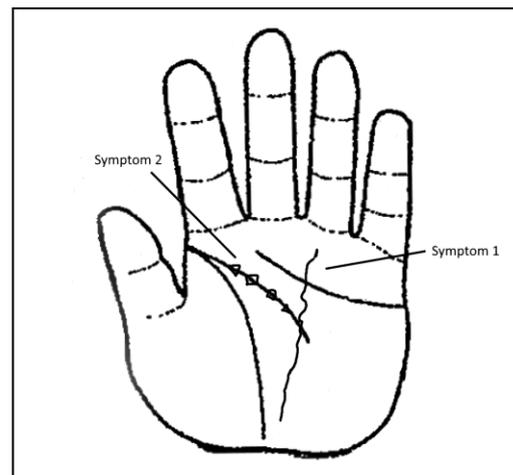


Figure 8. Parkinson's disease Symptoms

This is a progressive disease of the nervous system marked by tremor, muscular rigidity, and slow, imprecise movement, mainly affecting middle-aged and elderly people. The various symptoms that are associated with this illness include tremor, slowed movement, rigid muscles, impaired posture and balance, loss of automatic movements, speech changes and writing changes. There are 2 prominent features on the palm of the patient. They are broken or bent lines of the palm, and triangle lines' or lozenge's appearance on the palm.

E. Personal character analysis (Straightforwardness)

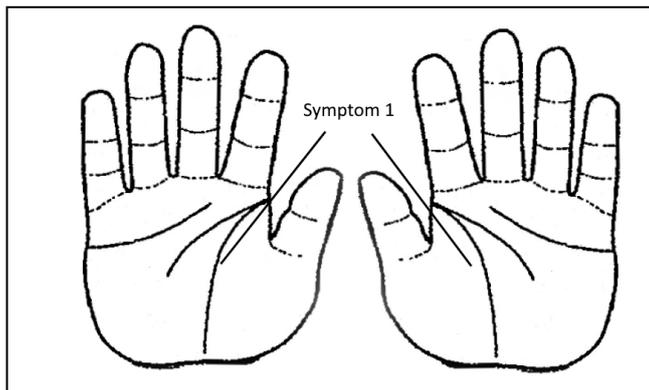


Figure 9. Straightforwardness characteristics in [14]

Although this is not an illness, personal character analysis or profiling of a person is always being taken seriously, be it in everyday life or during job interview. The straightforwardness of a person can be told through their palms. A left and right similar palmprints indicates that the person tends to speak more bluffly as discussed in [14].

F. Researches on previous research groups systems

Throughout the years, researches and implementations had been done by the previous groups of researchers from our institution in expanding the field of palmistry and its application in modern world. One of the in-depth research is to develop a system that reads an image of palmprint for Schizophrenia Disorders and Intellectual disability illnesses. Although the system is restricted to the subject of mental illnesses, a substantial database is developed to identify the illnesses. By using V-pairs matching and Line Edge Mapping(LEM), a region of interest(ROI) of the palm is identified and the palm lines are replicated and computerized for ease of matching. To identify if the palmprint belongs to a subject with the illnesses, the required sample images are extracted from database for comparison and confirmation.

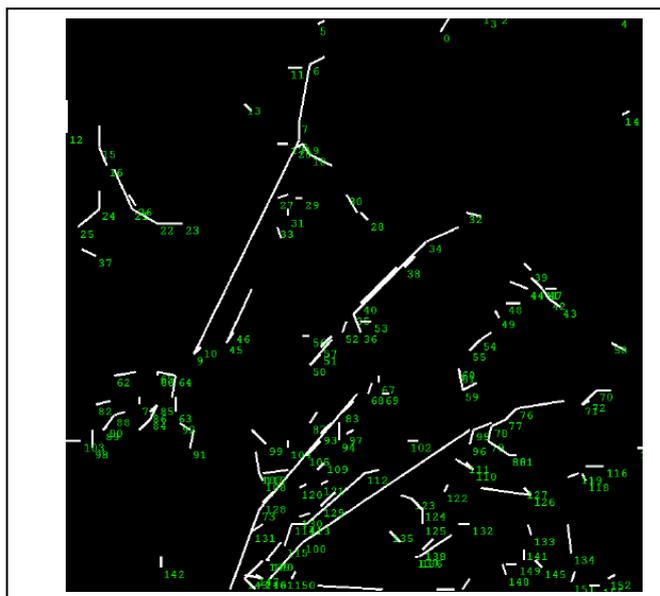


Figure 10. LEM image showing palm lines in [13]

Another research done is to explore using the same extraction technique to obtain the LEM image but to apply for

comparison between the left and right palm. It aims to find out if people with similar left and right palms will tend to be more straightforward and honest. By comparing the left and right palms' LEM images, the results were concluded to be positive, as shown in [14].

Regarding the use of palmistry for health, a previous group have created a comprehensive database of readings, diagnosis and images. This knowledge-based database identifies 55 different kinds of illnesses and their corresponding palm features based on [15]. They have also developed a query-driven system to allow users to select their palm features in order to obtain the illness reading results, but the system is lacking in user-intuitiveness and thus, was not easy to use as discussed in [16].

IV. IMPLEMENTATION AND FUTURE RECOMMENDATIONS

The creation of a system to unify the information and to act as a gateway to other fully implemented systems is desired. Therefore, this paper presents a possible implementation for the system. The system focus will be web-based and ease of use to provide the public easy access to the information and at the same time, allow them to make sense of the information available.

A. Web-based query system

The web query system created for both fortune telling and health prediction will be linked from the same homepage but the individual subsystem will slightly differ. This is because the approach and purpose of user using the system will differ. For fortune telling, users will generally want to know what is their fortune in relation to a specific area, instead of being asked about the features of palm lines directly without explanation of what it means. For health prediction, users will prefer to know what specific illnesses do the feature on their palm corresponds to and its brief description. Other users, who are more concerned of an individual illness, will want to search based on the illness and know its corresponding palm features as seen in the figure below. By developing the system from the user standpoint, this will ensure that the system be much user-friendly and benefit them.

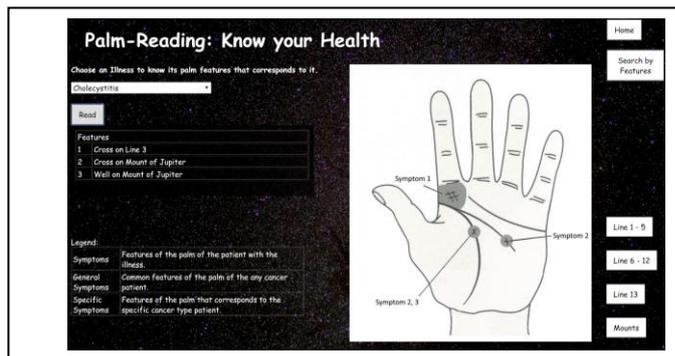


Figure 11. Screenshot of developed system

PHP files for receiving and fetching of sample images and results from database are separated from the main pages. CSS files which define the presentation of web page's contents are also separated from the main pages. These allow separation of concerns so that separate and distinct sections of the system address a specific concern, and development and maintenance of the system will be easier to achieve.

From the standpoint of cyber security of the system and safeguarding the database, extra precaution is taken to prevent the information of the database being wrongly accessed and manipulated. Therefore, the layout of the files is such that parameters are not passed to the databases via the URL address bar. This prevent the system from suffering to SQL injection attacks that will extract information from the database and change them.

B. Comparison

Various webpages on the internet have implemented and presented fortune telling palmistry and health prediction palmistry differently. By comparing with the various systems that are readily available for the public, we can understand the advantages and limitations of our developed web-based query system. To have a consistent basis of comparison, web-based information pages that are available on the Internet will be used for evaluation. Furthermore, the following factors will be considered for judging:

- 1) *Ease of use:* This factor focuses on the ease of using the web-based query system and how simple the user can proceed from inputting the features to getting the results of the reading.
- 2) *Comprehensiveness:* This factor focuses on the coverage of the features and their corresponding readings, understanding the comprehensiveness of the covered results.
- 3) *Presentation of the web-based query system information:* This factor focuses on the presentation of the results and information of each feature that the user is interested in.

TABLE I. FORTUNE TELLING COMPARISON

Fortune Telling	Comparison Criteria		
	Ease of use	Comprehensiveness	Presentation
Find Your Fate in [7]	Easy to use, provides pictorial aid to assist in identifying palm features, step-by-step guide to input palm feature and get result	Limited coverage of information of palm features and their meanings	Simple, presentation of palm features and meanings are separated, no indication of line and what it foretells before all the features are inputted by user
Self-developed query System	Simple to use, steps all laid out for users	Consists of all major palm lines and corresponding meanings, quite comprehensive compared to other webpages	Presentation of results and palm features clearly, pictorial aids are given to guide users in selecting palm features.

TABLE II. HEALTH PREDICTION COMPARISON

Health Prediction	Comparison Criteria		
	Ease of use	Comprehensiveness	Presentation
Hand Research in [10]	Relatively hard to use, information all over the place	Covers 9 major diagnostic themes, only 6 targeted illnesses/syndromes, limited in information	Information not presented clearly, hard to narrow down the features and identify the

Health Prediction	Comparison Criteria		
	Ease of use	Comprehensiveness	Presentation
		coverage	illness, not user-friendly to general users
Self-developed query System	Simple to use, steps all laid out for users, allow user to search either via illness or via palm features	Database consists of more than 50 illnesses and palm features, comprehensive as compared to other webpages	Presentation of results and palm features is clear, pictorial aids given to guide users in selecting palm features, legend included to explain pictures of images of palms

As seen in the comparison above, our developed system is better in providing ease for users and comprises a comprehensive database to support it.

C. Future Recommendation

As this paper only focuses on 8 major palm lines for fortune telling section. Future works can be in the area of including more palm lines to cover more aspects of fortune telling.

On the development of health prediction database, continuous efforts to add more information of illnesses and palm features can help in broadening the database.

In addition, verification of collected information on health prediction and fortune telling can be done with various expertise in those fields to improve on the accuracy of the database. For example, information on health prediction can be verified with TCM practitioners as they are more familiar in using palm reading as part of their health diagnosis for patients.

Furthermore, with the information verified, integration with past researches on palmistry can be added into this web based query system to allow the system becoming a gateway for more detailed illnesses identification. This is because although the current developed gateway system is comprehensive in its information extraction and display, it is lacking in accurate verification of the results. All the inputs are given by users, who may not be accurate when they are deciphering their palm features, thus, the reading results may not be representative of the true illness or fortune they have. Thus, it will be better to include the application developed for ROI extraction from palms and use it to decipher and compare the palm features accurately before obtaining the corresponding results.

As this is the age of mobile technology, after the system is successfully implemented and integrated with the deciphering system, a mobile application version of the system can be developed. This new mobile application should be able to utilise the deciphering system and the phone’s camera to accurately identify the user’s palm features. After deciphering, the extracted features can be pushed to the database to fetch the corresponding results for the users. This helps to provide increased accuracy and more convenience for the users.

CONCLUSION

In this paper, we have discussed the various palmprint and its applications through the ages. Both health prediction and fortune telling technologies are analysed in the earlier sections,

justifying the need for a simplified easy-to-use system that encompasses information from both areas.

In today's world, where technology and medical knowledge is more widespread, people will be in reach of all kinds of information, and thus, will seek evidence for verification of their opinion. They will tend to disbelief ideas that lack scientific evidence such as palmistry. Hence, there is a need to conduct further researches in order to prove and substantiate the results, dispelling the worries of many.

With the development of this web-based query system, hopefully, the public will be able to find out more about the researches that has been done in recent years on palmistry, especially in the area of health prediction. With this understanding, they will be able to benefit from these palmistry results and not dismiss it as mere superstition.

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