Web-Based Expert System Application in Determining Facial Care

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Abstract: Along with the development of technology, also developed a system that is able to adopt technology and the human thinking process is an expert system which contains specific knowledge so that everyone can use it to solve a specific problem, in this case, the author tries to apply an expert system skincare for determining facial care by complaint to our face. The main objective of this paper is to build a knowledge-based system that skincare can determine facial care than mac that is shown in the form of a website using PHP programming alongside MySQL databased.

Keyword: Expert systems, Skincare Facial Care, Forward Chaining

1. Introduction

Artificial Intelligence has any type of application, one of them are Expert System that has the ability to adopt a knowledge base that gained through data input from the Experts in the specific scientific study. There are so many diseases and we need the Expert to define the disease with the current symptoms. But the real Expert sometimes also have difficulty in identifying one disease because sometimes it has so many symptoms that also connected into another disease, so that a system is needed to help the expert, a system who can adopt the expert knowledge to identify the symptoms of the disease [2]. Every human has different skin type, knowing the different skin type is the first step which important to note. Knowing different skin type is going to make choosing facial care to become easier, with the right product for the right skin type. As far as the writers explain the introduction above, this research aims to analyze how to determine facial care. Therefore,

This research Problem formulated as follows What is the facial care for Adults, How this Expert System is going to analyze the Facial care and How the Forward Chaining method is going to be able to search facial care problems. The formulation of the problems discussed above, in order that this writing is directed and the expected goal can be achieved, then in writing this research is limited to the problems discussed. The restrictions are data research for expert skincare system is taken at home clinic Fuchsia premises using forward chaining method and the expert system is only limited to determine the facial skin care to be used, while the maintenance process itself is still done manually by the experts of beauty.
Previous research conducted by Dwi Oktavia Adrian and Sri in 2013 with Title of Expert System in Determining Type of Face Care, The study discusses a web-based expert system to diagnose treatment with forwarding chaining method. Similar research was also investigated by Rizka Gustikasari and Sri Winiarti with the title of research of Expert System Application Determination of Web-Based Beauty Treatment, this research is designed and built a new web-based expert system to determine the type of beauty treatment in accordance with the condition of consumer beauty.

Furthermore, another research conducted by Stefanie Sirapanji and Seng Hansen, in this study that the application of expert systems to handle facial beauty issues with decision tree method can be used as a tool for patients to find solutions of facial beauty problems experienced and also useful for experts to storing expert expertise needed to handle patients, with a 100% accuracy rate.

2. Methodology
An inference is a logical conclusion or an implication based on available information. In the expert system, the inference process is performed in a module called Inference Engine. The inference function is to prove the hypothesis. If the hypothesis has been entered into the expert system, then the inference machine first checks whether the hypothesis already exists in the database or not.

The method of the expert system used is the forward chaining method, which is a search technique that begins with known facts, then matches those facts with the IF part of IF-THEN Rules. Blurred set from this research is:

| Code | Treatment Name |
|------|----------------|
| R01  | Facial Gold    |
| R02  | Facial Acne    |
| R03  | Facial Akupresur |
| R04  | Facial Collagen |
| R05  | Facial Electrocauter |
| R06  | Facial Intensif |

Based on the data obtained from interviews and literature studies it can be obtained decision tree application skincare expert system in determining the type of facial care (facial care) based on the Web as follows:
Figure 1. Decision tree facial care expert system

| Table 2. Expert System Inference |
|----------------------------------|
| **No** | **Rule** | **Solution** |
|-------|----------|--------------|
| 1     | IF facial skin is not elastic when pressed  
Not Glowing  
Not Toned  
THEN Facial Gold | Treatment with gold grain is believed to make the skin becomes supple and glowing and make the skin texture becomes cleaner, and using a gold mask. |
| 2     | IF Facial skin oily  
Has a blackheads  
Has acne  
THEN Facial Acne | How to get rid of acne, acne can be done in traditional and modern ways, one of the traditional ways is diligently washing the face, and modern ways can go to a beauty expert with advanced equipment from a doctor. |
| 3     | IF face skin not glowing  
Pores looks huge  
The Presence of Black Stain or Melasma  
THEN Facial Akupresure | Acupressure is safer because it uses the technique of finger pressure. Which has the benefit to accelerate blood circulation so that make facial skin and ageless youth? The practice is only biased at the beauty clinic. |
| 4     | IF There is a circle line in the Eye area.  
The face line is clearly visible  
Not look toned  
The presence of a black stain or Melasma.  
THEN Facial Collagen | A gel made from pure collagen used as daily care every morning and night. Can be worn before using the night cream or morning cream. Methods with facial collagen can eliminate the effects of aging because of the decrease in the amount of collagen coated skin. For more ease, you can do it manually to a beauty doctor. |
| 5     | IF face skin  
There is a protrusion  
There are nodules  
THEN Facial Elektrocauter | Electrocautery is a therapy by utilizing an electric current with a certain strength to overcome some skin disorders. To be able to get this treatment can only be done by a beautiful home that has a dermatologist. |
| 6     | IF face skin  
Acne breaks out  
Sensitive skin  
Feels dull  
THEN Facial Intensif | Intensive facial care uses plant materials and pure oxygen sprays that overcome sensitive skin problems. This treatment is done manually at the beauty home. |
3. **Result And Discussion**

Testing and system implementation aim to see whether the system is designed in accordance with what is desired or not, after the testing and implementation the quality of a system will be seen. Here is an implementation of skin care expert system design to determine facial care (facial care).

The following is the User's main page form, on this homepage containing knowledge base, rule base, report per illness, per patient report, disease sickness.

![Image of the Expert System Consultation]

**Figure. 2 The Expert System Consultation**

Consultation menu is a menu that should be accessed by the user. Before the consultation user must log in first, otherwise the user can not do the consultation. To log in the user can directly enter from the login page that is in the home, Login can only be done by the user who previously had to register.
After login has succeeded user can continue consultation. Users will be faced with questions about the complaints or symptoms experienced. Users stay to match whether the user has a complaint or symptoms or not. In the Admin menu of consultation data that contains data on the names of treatments that have been obtained from beauty experts for facial care. Next there is a list of questions. The admin role in this system is processing user data, processing expert data and editing admin data. This user data processing and expert data are done to find out the identity of each user or expert.
By using a system that has been created, for the diagnosis of facial care, the user can choose the symptoms of the disease by mentalist symptoms perceived in accordance with the provided system, if the symptoms are entered in accordance with existing rules then the system will diagnose and notify the type of treatment, if symptoms do not fit then the system will tell you that it is not found. In this research using forward chaining method, to diagnose facial treatment with the search using 21 rule So get more diagnosis result and better, while research is done (SriwiniartiDkk, 2013) only use 10 rule.
4. Conclusion

From the results of analysis, design, testing, and implementation that has been done on expert skincare system for this facial care it can be concluded:

1) By using a system that has been made, for the diagnosis of facial care, the user can choose the symptoms of the disease by mentalist symptoms perceived in accordance with the provided system, if the symptoms are included in accordance with existing rules then the system will diagnose and notify the type of treatment, if symptoms do not match then the system will tell you that it is not found. In this study using this forward chaining method, for the diagnosis of the facial treatment with tracing using 21 rules with 6 types of Facial Care.

2) Determination of the facial care usually done by experts of beauty experts, such as facial gold, facial acne, facial acupressure, facial collagen, facial electrocautery, intensive facial which can be implemented into a computer program using a database as media storage of knowledge.

5. Suggestions

The system designed in this research can be used as a guide for the user to perfect so that the skincare expert system can be utilized optimally. To increase the functionality in the Future so that writers have suggestion of list, as follows:

1) Use of facilities that allow users to communicate with experts.

2) Need to enrich the knowledge that will result in more complex decisions.

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