

REVIEW JOURNAL

DESIGN AND DEVELOPMENT OF ANDROID BASED TEETH AND MOUTH DISEASE DETECTION EXPERT SYSTEM USING DEMPSTER-SHAFER METHOD

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INTRODUCTION

Expert System is an attempt to impersonate an expert. Usually the Expert System is a decision-making software capable of achieving comparable performance levels of an expert in the field of special and narrow problems. The concept of expert systems is based on the assumption that expert knowledge can be stored and applied to the computer, then applied by others when needed. With the implementation of expert systems into computers, it can generate several benefits such as accuracy, speed, and can be accessed at any time so as to ease the tasks of the experts in their field. The mouth is an open space of food and water. Teeth are a very important organ and very vital existence. Therefore dental health is very important. The tracing method used is Forward Chaining, is the inference begins with the information available and only then will be obtained conclusion. The facts used in this study are the symptoms felt by the patient, while the conclusion is the result of disease diagnosis.

THEORIES

EXPERT SYSTEM

Expert system is a system that adopts human knowledge and applies it to the computer so that the computer can resolve the problem as was done by experts. Expert system can solve a problem by imitating the work of experts

TEETH AND MOUTH DISEASE

Teeth are hard parts present in the mouth used for chewing food. Gear consists of three main parts: enamel, dentin, and pulp. Disease is a medical disorder that is caused by bacteria, viruses, or physiology or tissue system abnormalities in organs (in living organisms)

DEMPSTER-SHAFER

Dempster-Shafer is a method of proof based on the function of trust and sensible thinking. This method is used to combine pieces of information (evidence) separate to be calculated in order to get the results in the form of the possibility of an event. Dempster-Shafer theory is the representation and combination of uncertainties.

ANDROID

Android is an operating system made by Google. Android was developed using the Java programming language. The fast growing of Android will make applications such as expert system is easy to use by users. Android has now reached version 5.0 (Lollipop) and will continue to be developed for the future.

RESEARCH METHODS

The methods used in this study are as follows:

1. LITERATURE STUDY
2. EXPERT INTERVIEW
3. SYSTEM ANALYSIS
4. SYSTEM DESIGN
5. SYSTEM PROGRAMMING
6. TEST AND EVALUATION
7. REPORTS WRITING

IMPLEMENTATION AND TESTING

A. Implementation

Here are some screenshots of the results of the implementation of the teeth and mouth disease detection expert system detection that have been successfully created. Here is the home page of this application. On this page there are six menu buttons that start, glossary, setting, hospital info or clinic info, help, and about.



Figure 1. Application's start page

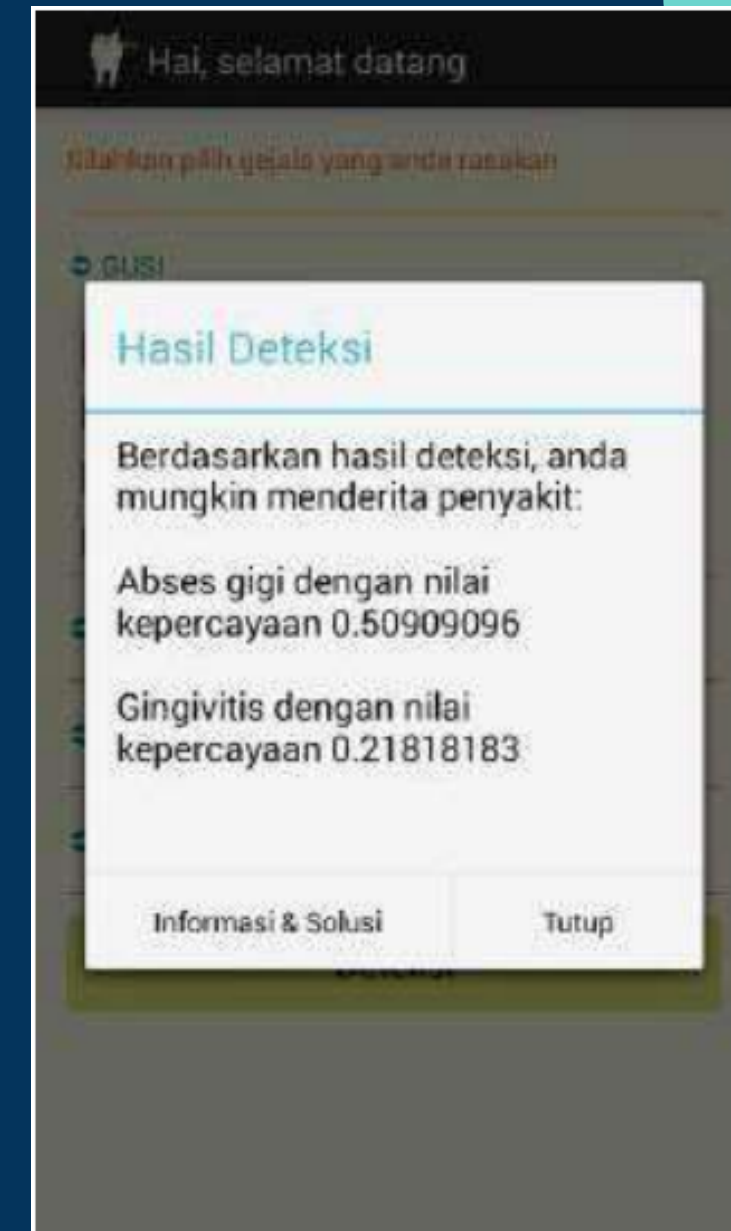


Figure 3. Detection result

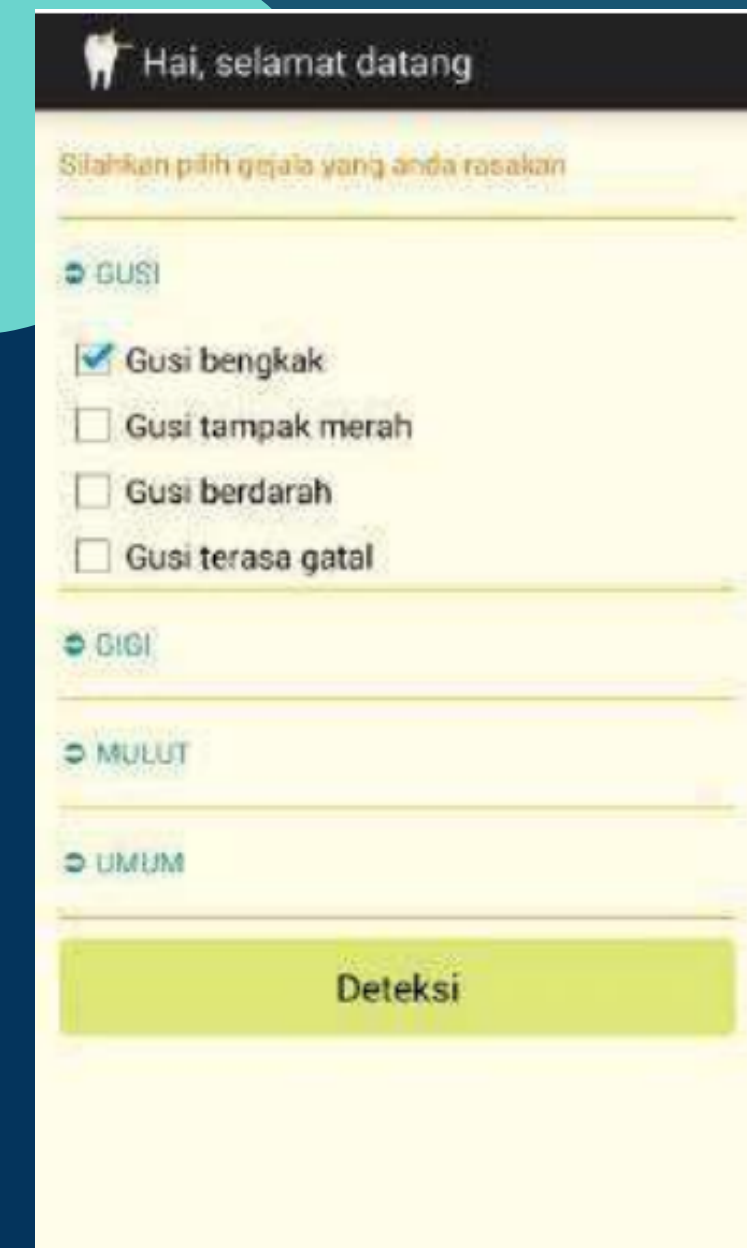


Figure 2. Start page with symptom choice

B. Test Result

Trials through expert had been done by taking ten examples of cases provided by drg. Lanny Widjaja, with symptoms often suffered by patients. Table 3.

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No.	Perceived symptoms	Expert Analysis Results	System Analysis Results
1.	Swollen gums The gums appear red Gums itch	Teeth Abscesses Tartar Gingivitis	Teeth Abscesses Tartar Gingivitis
2.	Throbbing tooth pain / inflammation in the tooth	Dental caries Teeth Abscesses	Dental caries Teeth Abscesses
3.	Bad breath Bleeding gums	Halitosis Tartar	Halitosis Tartar
4.	Teeth cavity There are patches of white / brown at tooth enamel	Dental caries	Dental caries
5.	Lump in the mouth (lip or palate) Lump in the mouth does not hurt	Mucocoele	Mucocoele
6.	Gums itch	Gingivitis Tartar	Gingivitis Tartar
7.	Wounds in the oral mucosa Stinging wound while eating, drinking, or touched	Mouth ulcer	Mouth ulcer
8.	Swollen gums Tooth pain when a knock	Teeth Abscesses Periodontitis Gingivitis	Teeth Abscesses Periodontitis Gingivitis
9.	Toothache when exposed to food / beverage cooler / sour	Dentin Hypersensitivity	Dentin Hypersensitivity
10.	Toothache There are patches of white / brown at tooth enamel	Pulpitis Dental caries	Pulpitis Dental caries

Table 3. Recapitulation of trials result through expert

CONCLUSIONS

Android based teeth and mouth disease detection expert system application has been built by using Dempster-Shafer method. Based on the ten examples of cases that were tested, the results provided by the system correspond 100% to the data validation provided by a dentist is drg. Lanny Widjaja. Based on this, the detection result given by the expert system is an accurate and reliable result.



THANK YOU

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