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Herb leaves recognition using gray level co-occurrence matrix and five distance-based similarity measures

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Herb medicinal products derived from plants have long been considered as an alternative option for treating various diseases. In this paper, the feature extraction method used is Gray Level Co-occurrence Matrix (GLCM), while for its recognition using the metric calculations of Chebyshev, Cityblock, Minkowski, Canberra, and Euclidean distances. The method of determining the GLCM Analysis based on the texture analysis resulting from the extraction of this feature is Angular Second Moment, Contrast, Inverse Different Moment, Entropy as well as its Correlation. The recognition system used 10

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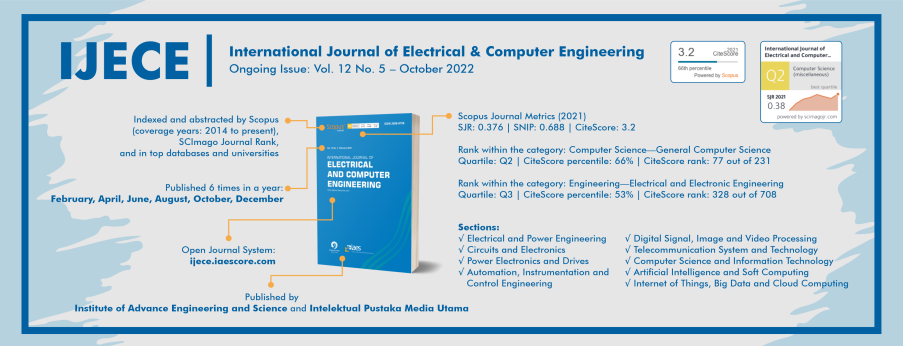

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Herb Leaves Recognition using Gray Level Co-occurrence Matrix and Five Distance-based Similarity Measures

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ABSTRACT

Herb medicinal products derived from plants have long been considered as an alternative option for treating various diseases. In this paper, the feature extraction method used is Gray Level Co-occurrence Matrix (GLCM), while for its recognition using the metric calculations of Chebyshev, Cityblock, Minkowski, Canberra, and Euclidean distances. The method of determining the GLCM Analysis based on the texture analysis resulting from the extraction of this feature is Angular Second Moment, Contrast, Inverse Different Moment, Entropy as well as its Correlation. The recognition system used 10 leaf test images with GLCM method and Canberra distance resulted in the highest accuracy of 92.00%. While the use of 20 and 30 test data resulted in a recognition rate of 50.67% and 60.00%.

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1. INTRODUCTION

Herb medical products derived from plants have been traditionally believed as an alternative option for treating various diseases, including for the treatment of chronic diseases such as cancer, heart disease, hepatitis, and also kidney and heart failure, at least in some Asian regions. The reason of using herbal leaves is the leaf can be easily found anywhere and processed in any form.

With today's technological advances, the demand for computer application also increases to provide benefits to human life. One of them is the need for applications that can recognize the herbal leaves pattern. The complexity in recognizing the leaf-based plants, due to various types and the different uses of herbal leaves, makes the herb leaves recognition difficult.

Various features related to the texture of the leaves were studied and the most appropriate features were used for leaf image-based plant classification. The developed system could be used to identify medicinal plants for particular diseases of human beings. The texture features have been extracted with using the GLCM and the PCA algorithms on the 390 images from 65 datasets and the new leaf or a defect to the test [1]. The PCA method comes out to be more efficient compared to the GLCM method by 98.46% accuracy. But the calculation time in the PCA method is time-consuming for example making the Eigenvector from considered leaves dataset almost took 2 hours. However The advantage of the method GLCM speed image recognition in just 5 seconds and weaknesses GLCM is very sensitive to any changes for images such as deforming or giving the new leaf image as a test.

In previous research, image-based retina recognition using the GLCM characterization (ASM, Contrast, IDM, and Entropy) and the Euclidean distance that produce retinal image recognition accuracy rate of 67.71%. The use of mean and standard deviation as the Euclidean distance threshold value in testing

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The Security Challenges of The Rhythmprint Authentication

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ABSTRACT

The Rhythmprint authentication combines an advantage of the traditional keystroke authentication and the multi-touch technology based on a touchable device such as touchpad on a laptop, a smartphone and a tablet. With the Rhythmprint authentication, the user is less likely to suffer from shoulder surfing and eavesdropping attacks. This research provides empirical evidence to verify the security performance of the Rhythmprint authentication comparing to the traditional keystroke authentication for shoulder surfing and eavesdropping attacks, when the user tries to login to a website on a laptop for 10 times in a public place while the attacker stands behind. The experimental results show that the Rhythmprint authentication provides higher security than the traditional keystroke authentication in both shoulder surfing and eavesdropping attacks.

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1. INTRODUCTION

The Rhythmprint authentication [1] is a novel method of a biometric authentication. It combines an advantage of the traditional keystroke authentication [2] and the multi-touch technology based on a touchpad on a laptop, a screen of a smartphone and related touchable devices. The Rhythmprint authentication research indicates that the user is less likely to suffer from shoulder surfing and eavesdropping attacks. Furthermore, the initial results show that the Rhythmprint authentication provides higher security than other related methods. This research is looking forward to comparing the security performance of the Rhythmprint authentication to the traditional keystroke authentication, in terms of shoulder surfing and eavesdropping attacks when the user tries to login to an application on laptop in a public place.

The Rhythmprint authentication uses multi-touch technology for collecting the rhythm when the user touches a touchable device. Three measurements which consist of holding time, latency time and number of fingers per beat, are collected and used to create the user template. When the user needs to login to a device, the user only needs to touch fingers on the touchable device with the registered rhythm. K-NN algorithm was used for classification. The attacker must perform shoulder surfing and eavesdropping attacks in order to attack the authentication. This is because the attacker must know two things: the rhythm and the number of fingers per beat. An eavesdropping attack hardly occurs because touching the finger on a device does not makes a loud sound. The algorithm of Rhythmprint authentication can be split into two modules, namely, registration module and authentication module. Figure 1 shows the registraition flowchart of Rhythmprint authentication and Figure 2 shows how authentication of the Rhythmprint authentication works.

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An Experimental Investigation of Heating in Induction Motor under Open Phase Fault

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ABSTRACT

Although a three–phase squirrel cage induction motor is known by its qualities of robustness and low cost of construction. However, this machine can be affected by potential defects that affect the production, safety, quality of service and profitability of installations. However, to show the behavior of induction motor in different operating modes, the studying of this machine is very important. This paper presented the results of an experimental investigation to see the impact of the open phase fault on the thermal behavior in the 2.2 kW three phase squirrel cage induction motor, and to display the stator current waveforms with healthy and faulty conditions under different loads.

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1. INTRODUCTION

The three-phase induction machine is one of the most popular rotating electrical machines used in industrial driven equipment. They carry out their function for many years and adapt themselves to different performances. Moreover, these motors are widely used in many industrial processes, such as electric power stations, oil refineries, and factories, due to their simplicity, rugged construction and relatively low manufacturing costs. However, this machine can be affected by potential defects that affect the production, safety, quantity of service and profitability of installations, such as stator faults, broken rotor bars and end ring faults, bearings and the eccentricity-related faults; which are the most common failures and thus require special attention. For this reason, the presence of these failures creates an unbalance in the temperature distribution of the motor, and it is also noted that heating in induction motors must be kept below certain limits, because as a rule of thumb for every 10°C increase in temperature the age of insulation life is reduced by 50% [1]. For that, the appearance of the constraints mentioned previously requires an important need for accurate estimation of temperature, particularly in those hot spots where a risk of adverse thermal conditions increases. However, to predict the machine temperature with and without defect, thermal models are employed that can be used to improve the machine design or to determine load ability during different operating conditions. Furthermore, the determination of temperature in an induction motor can follow two possible approaches. The first involves an indirect estimation of temperature through the use of thermal modeling. The second approach involves an experimental investigation which allows the measurement of temperature for different load and supply conditions.

In the past decades, there have been continuing efforts in studying thermal induction motors with and without faults. In references [2]-[7], the authors deal with the thermal modeling of an induction motor of Totally Enclosed Fan Cooled “TEFC” design for healthy operations. The analysis and the results reported in