

Detection Of Diabetics Mellitus And Tongue Cancer Using Tongue Features By Hybrid Classifier

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Abstract: *Diabetics Mellitus (Dm) And Its Problems Leading To Diabetic Retinopathy (Dr) And Tongue Cancer Are Soon To Become One Of The 21st Century's Major Health Problems. This Represents A Huge Financial Burden To Healthcare Officials And Governments. To Overcome This Burden, We Develop This Model To Detect Both Diabetics Mellitus And Tongue Cancer On A Single Model. It Is Based On Person Tongue Images Using The Feature Of Color, Texture And Geometry. Features Extraction Are By Different Color Spaces I.E Rgb To Hsv. First Image Is Enrolled And It Is Undergone With Enhancement And Background Removal. Then All 3features (Color, Texture, Geometry) Are Extracted. With All This It Is Easy To Distinguish A Diabetes Mellitus And Tongue Cancer Patient And Normal Person From Their Tongue Images. A Tongue Color Limit Is Established With 12 Colors Representing The Tongue Color Features. The Texture Value Of Eight Blocks Strategically Located On The Tongue Surface. With The Additional Means Of All Eight Blocks Are Used To Characterize The Nine Tongue Texture Features. Finally, 13features Extracted From Tongue Images Based On Measurements, Areas, Distances And Their Proportion Represent The Geometry Feature.*

I. Introduction

Diabetes Is A Group Of Metabolic Diseases Caused By Hyperglycemia This Is Because Of Defects In Insulin Secretion, Insulin Action And Both. Next Stage Chronic Hyperglycemia Of Diabetes Is Associated With Long Term Damage, Dysfunction, And Failure Of Different Organs Of Body, Especially The Eyes, Kidneys, Nerves, Heart, And Blood Vessels. This Deficiency Leads To Destruction Of The B-Cells Of The Pancreas With Consequent Insulin Deficiency To Abnormalities That Result In Resistance To Insulin Action And Reaction Process. Deficiency Of Insulin Results From Inadequate Insulin Secretion Otherwise Diminished Tissue Responses To Insulin At The Complex Pathways Of Hormonal Reaction In The Body. Long-Term Complications Of Diabetes Causes Retinopathy With Potential Vision Loss, Nephropathy Leading To Renal Failure, Peripheral Neuropathy With Foot Ulcers, Amputations, Charcot Joints, And Autonomic Neuropathy Causing Gastrointestinal, Genitourinary, And Cardiovascular Symptoms And Sexual Dysfunction. Patients With Diabetes Have An Increased Incidence Of Atherosclerotic Cardiovascular, Peripheral Arterial And Cerebrovascular Disease. Hypertension And Abnormalities Of Lipoprotein Metabolism Are Often Found In People With Diabetes. Tongue Diagnosis Is One Of The Few Diagnostic Techniques That Accord With The Most Promising Direction With Pain And No Injury. Tongue Diagnosis Has Played Such A Prominent Role In The Diagnosis And The Subsequent Treatment Of Disease And It Has Attracted An Increasing Amount Of Attention Both In Clinical Medicine And In Biomedicine. However, Traditional Tongue Diagnosis Has Its Inevitable Limitations. First, The Clinical Competence Of Tongue Diagnosis Is Determined By The Experience And Knowledge Of The Physicians. Second, Environmental Factors, Such As Differences In Light Sources And Their Brightness, Have A Great Influence On The Physicians In Obtaining Good Diagnostic Results From The Tongue. Finally, Traditional Tongue Diagnosis Is Intimately Related To The Identification Of Syndromes, And It Is Not Very Well Understood By Western Medicine And Modern Biomedicine. So, That It Is Necessary To Build An Objective And Quantitative Diagnostic Standard For Tongue Diagnosis.

II. Related Work

Computer Aided Diagnosis (Cad) Of Diabetic Retinopathy (Dr)—A Common And Severe Complication Of Long-Term Diabetes Which Damages The Retina And Cause Blindness. Since Microaneurysms Are Regarded As The First Signs Of Dr, There Has Been Extensive Research On Effective Detection And Localization Of These Abnormalities In Retinal Images. In Contrast To Existing Algorithms, A New Approach Based On Multi-Scale Correlation Filtering (Mscf) And Dynamic Thresholding Is Developed. This Consists Of Two Levels, Microaneurysm Candidate Detection (Coarse Level) And True Microaneurysm Classification

2.1:Existing System

In The Existing System , The Diabetes Mellitus Is Detected By Using Tongue Images, Further The Algorithm Used Is Edge Detection Method But Unfortunately Results In Poor Detection Of Edge. Global Threshold Algorithm And Neural Network Has Disadvantage For Large Features And Characteristics Of Image Makes The Detection Of Disease Difficult.

2.2:Proposed System

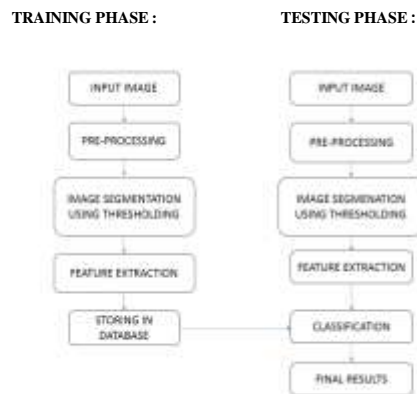
In Our Proposed System , The Diabetes Mellitus Is Detected Along With The Tongue Cancer. Our Method Uses Svm Classifier For The Classification Purpose.The Tongue Image Of Person Is Considered As Input Image. This Image Is Further Proceed For Pre-Processing , It Is Done To Produce Uniform Illumination. The Pre-Processing Method Includes Smoothing , Background Subtraction And Mean.

2.2.1:Svm Classifier

In Machine Learning, Support Vector Machines (Svms, Also Support Vector Networks) Are Supervised Learning Models With Associated Learning Algorithms That Analyze Data Used For

Classification And Regression Analysis. An Svm Model Is A Representation Of The Examples As Points In Space, Mapped So That The Examples Of The Separate Categories Are Divided By A Clear Gap That Is As Wide As Possible. In Addition To Performing Linear Classification, Svms Can Efficiently Perform A Non-Linear Classification Using What Is Called The Kernel Trick, Implicitly Mapping Their Inputs Into High-Dimensional Feature Spaces. The Clustering Algorithm Which Provides An Improvement To The Support Vector Machines Is Called Support Vector Clustering And Is Used In Industrial Applications Either When Data Are Not Labeled Or When Only Some Data Are Labeled As A Preprocessing For A Classification Pass.

III. Project Description



The System Proposes A Tongue Image Pre-Processing, Feature Extraction And Feature Analysis And Final Classification. This Process Is Depicted . For Svm Classification, System Takes Images Of Tongue And Divide The Image In 6 Areas. For Each Area Number Of Color And Features Are Extracted. From These N Number Of Features, Svm Identify The Levels Of Severity Such As, Health, Acute, Sub A Cute, Chronic And Regenerative.

In Training Phase , The Input Images Had Been Selected And Given As A Input . The Four Stages Includes Pre-Processing , Image Segmentation , Feature Extraction And Classification Had Been Proposed. In Pre-Processing Stage, The Noise Had Been Removed From The Input Image Using Filters ,

And Image Resizing , Contrast Enhancement Process Will Take Place.In The Image ,Standard Deviation , Entropy,Contrast,Etc.. This Features Had Been Stored In A Database.In The Classification Block , We Are Using Svm Segmentation Block.The Image From The Pre-Processing Had Been Fed Into It , The Technique Named Thresholding And Edge Detection Had Been Used . This Method Will Segment The Tongue Part From Other Region.From The Segmented Part , The Various Features Had Been Main Purpose Of This Classifier Is To Classify The Tongue Images Whether It Is Affected By Disease Or Not.

IV. Results

Fig1: Input Image



Fig2: Edge Detection

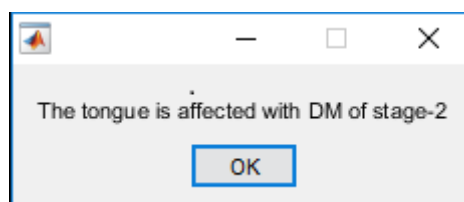


Fig3: Message Box

V. Conclusion

In This Paper, Image Of Tongue Is Processed. Features Extraction From Tongue Image Is Proposed From Three Group Includes Color, Texture And Geometry.Svm Used To Establish The Classification For Diabetes Model Which Provided Good Result. Pre-Processing Of Data And Its Parameters Has Impact In Result. Then Advantage Is That Information Provided Is Not Lost As Considered About The Previous One. Hence The Classification Produced Good Efficiency .

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