Dedication

I dedicate my thesis to my family and many friends.

A special feeling of gratitude to my loving parents: Mohamed Elmustfa and salwayosuof whose words of encouragement.

My brother ammar and my sister sara, have never left my side.

I also dedicate this dissertation to my many friends who have supported me throughout the process.NazikIbrahem ,HebaDolib , ReemEmad , Mongiya Nasr Eldeen .

I dedicate this work and give special thanks to my Teachers.

And to all patent of diabetic disease in word.

Acknowledgement

I would like to give thanks to Allah for guiding my directions throughout this thesis, and for granting me more knowledge, more insight and more enlightenment.

I am deeply indebted to my supervisor Dr. Either Mohamed Hussein for his wisdom to move me forward and help me to reach this level.

I would like to acknowledge and thank Dr. Magdi Baker for dedicating to me some of their time and experience.

I would like to acknowledge and thank all of staff inAbuaaqlh Diabetes Center in Wad Medani for dedicating to me some of their time

Special thanks goes to the members of staff Biomedical Engineering department in medani heart center for their continued support.

Finally I would like tospecial thank the engineerTasnim Ahmed Abdelrazig Mohammed that assisted me with this thesis.

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Abstract

Diabetes mellitus is a chronic disease which occurs when the pancreas does not produce sufficient insulin, or when thebody cannot effectively use the insulin it produces. It is an important and relatively common medical condition and isa risk factor for many other medical conditions like stroke,renal failure, blindness, kidney disease and coronary artery disease.

Physicians have to elicit a comprehensive medical history and thorough physical examination before diabetes mellituscan be suspected. In this study a lot of data has been collected on the diseases diagnosis

The use of neural networks for diabetic Diagnosis has also attracted the interest of the medical informatics community because of their ability to model the nonlinear nature ,the goal of this study is to design a novel approach for diagnosing diabetes using Artificial Neural Networks. The study aims also identify the best ANNs type which is more suitable for diagnoses diabetes .so three ANNs was designed which are feed forward back propagation ,Recurrent and Elman network to designed which one has the best performance .

Using MATLAB BPF was designed and trained in the BB NN , RNN, and elman network ,first one hidden layer between input and output layer with changed about (3,4,5,6,7,8,9) neuron in hidden layer . type of activation function which chooses firstly is log sigmoid and tan sigmoid function.

The result obtained that amount the three neural network.

1- theelman network with 5 neuron in the hidden layer with TAN sigmoid activation function has performance 0.00083289 2- For the BPNN with 7 neuron in the hidden layer with TAN sigmoid activation function has performance 0.00011178 that is best performance network in this study. 3- For the RNN with 8 neuron in the hidden layer with LOG sigmoid activation function has performance 0.00019097.

المستخلص

داء السكري هومرضمُزمنيَحْدثُمتى ما أنالبنكرياسَلايُنتجُالأنسيوليكالفي ،أَوعندمالايَستطيعُ الجسم إسْتِعْمالالأنسيولينِالمُنتجُ . هوحالةصحيةٌمهمةٌومشتركةٌنسبياًللعديدِمِنْ الحالات الصحيةِالأخرىمثلاالذبحة ،الفشل الكلوي والعمى وامراض الكلى ومرضالشريانِالتاجي

الأطباء يجب أن يستخرجو تأريخطبيشاملوفحصطبيعيشاملقبلتثبيتمرضالسكّرِ للشخصالمشكوكفيهَ . فيهذهالدراسه جمعتالكثيرمِنْ البياناتالتي تمكن منتشخيصِ المرض.

إستخدام الشبكاتالعصبيةِفيتشخيصِ السُكّريجَذبَإهتمامَ في مجال تقنيةِالمعلوماتالطبيةِبسببقدرتِهَاشكيلالطبيعةِاللاخطّيةِ ، الهدف من هذه الدراسه هو تصميم نظره مبتكره لتشخيص مرض السكري باستخدام الشبكات العصبيه وكذلك من الاهداف التعرف على أفضل ثلاث شبكات من نوع ار ان ان اس تشخص مرض السكري مصممه من نوع شبكه خوارزميه التوليد الخلفي ، و شبكه الاعاده ، وشبكه ايلمان التي حققت أفضل أداء .

باستخدام برنامج الماتلاب لتصميم وتدريب شبكه ال بي بي ان ان ، ار ان ان ،وشبكه ايلمان ، بطبقه واحدة مخفيه بين طبقتي الدخل والخرج مع التغير في عدد نيرونات الطبقه المخفيه (3,4,5,6,7,8,9) ، انواع الدوال الوظيفيه المستخدمه هي تان و اللوق.

أفضل ثلاث نتائج متحصله للشبكات الثلاث هي كالتالي:

1-شبكه ايلمان مع 5 نيورونات في الطبقه الخفيه مع الداله الوظيفيه تان وكان الاداء 0.00083289

2-شبكه بي بي ان ان مع 7 نيرونات في الطبقه الخفيه مع الداله الوظيفيه تان وكان الاداء 0.00011178 وكانت هذ الشبكه أفضل أداء على الاطلاق خلال هذه الدراسه

3- شبكة ار ان ان مع 8 نيرونات في الطبقه الخفيه مع الداله الوظيفيه لوق وكان الاداء 0.00019097