



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(أَوَّلَ مَا يَرَى الْإِنْسَانُ أَنَا خَلَقْنَاهُ مِنْ نُطْفَةٍ فَإِذَا هُوَ خَصِيمٌ مُبِينٌ)

آية (٧٧)

سورة يس

Dedication

*To my mam and soul of my dad
My lovely sisters for continue support
My family, my friends and for her
To every one struggle to Support me
I dedicated this work*

Acknowledgement

Praise Allah and thank very much to the mind grace which given us and distinguished us by it, so thanked him for him his blessing.

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Love and care.

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ABSTRACT

This thesis aims to study how the artificial neural network which is one of the artificial intelligence (AI) techniques in the application of biomedical images identified and determining its kind, also has demonstrated the idea of artificial neural networks in the vital areas of research related to the medicine field, because ANN are currently a hot researches in medical area particularly in field of radiology, cardiology, oncology etc.

Also the research represents a practical model for the use of neural networks to identify the medical images, which is considered as an early detection system of the brain tumor.

Neural Network must able to determine the state of brain tumor according to magnetic resonance imaging and determine is it normal or abnormal from each MR image, Harlick texture feature will extract to prepare training data which was introduced to neural network as inputs and target vector, two network was designed and trained using MATLAB feature nntool which are Feed forward back propagation and Cascade-forward back propagation, after testing cascade network achieved performance ratio 86.6% and FFBP achieved 91.42%.

المستخلص

يهدف هذا البحث الي دراسة تصميم شبكة عصبية اصطناعية وهي احدي تقنيات الذكاء الاصطناعي في تطبيق التعرف علي الصور الطبية ، اوضحت الشبكات العصبية الاصطناعية من المجالات البحثية الحيوية في مجال الطب كما أثبتت فكرة الشبكات العصبية الاصطناعية نفسها في البحوث ذات الصلة بمجال الطب، وذلك لأن الشبكات العصبية الاصطناعية حاليا تستخدم في الأبحاث الساخنة للمجالات الطبية وخاصة في مجال الأشعة، وأمراض القلب والأورام الخ .

أيضا هذه الاطروحة ستمثل نموذجا عمليا لاستخدام الشبكات العصبية للتعرف على الصور الطبية، والتي تعتبر بمثابة نظام الكشف المبكر للورم في المخ ويقدم البحث نموذج عملي لاستخدام الشبكات العصبية في الكشف المبكر عن سرطان الدماغ وتحديد الاورام وحالة الدماغ اما طبيعي او غير طبيعي (مصاب بالسرطان) وذلك عن طريق الصورة المدخلة اليه والمأخوذة مسبقا من جهاز الرنين الميغناطيسي وولكل صورة تم استخلاص معالم Harlick للنسيج وذلك لتحضير بيانات التدريب للشبكة .

تم تصميم شبكتين هي شبكة الخطأ الراجع الامامي المنتشر، شبكة الخطأ الراجع الامامي المنتشر المتواصل .وبعد الاختبار حققت Cascade معدل اداء دقته ٨٦.٦% وكذلك حققت شبكة FFBP معدل اداء دقته ٩١.٤٢%.