

الآية

بسم الله الرحمن الرحيم

﴿قُلْ لَوْ كَانَ الْبَحْرُ مِدَاداً لِكَلِمَاتِ رَبِّي لَنَفِدَ الْبَحْرُ قَبْلَ أَنْ تَنفَدَ كَلِمَاتُ رَبِّي وَلَوْ جِئْنَا بِمِثْلِهِ مَدَدًا﴾

صدق الله العظيم

(سورة الكهف الآية 109)

Dedication

To all whom I know; to my parents, to my family, to my friends, to all peoples.

To School of Electronics Engineering Sudan University of science and technology.

Acknowledgement

First and for most I have to thank my aunt Sitna Abdulrhman for her love and support throughout my study time. For my cousin Mergany Abdulrhman thank you for giving me strength to reach for the star and chase my dreams. My brother Abdulrhman, lovely sisters Muzdalifa, Salma, and Marwa, aunties and cousins deserve my wholehearted thanks as well.

This thesis is dedicated to my parents for their endless love, support and encouragement.

I would like to sincerely thank my supervisor, Dr. Alaa Eldeen Awdaa, for his guidance and support throughout this study, his comments.

To all my friends thank you for understanding and encouragement

This thesis is only a begging of my journey.

Abstract

Transportation is a large and important part of the economy of a country; train is one of the main transportation systems of Sudan. Therefore, we should have a good and strong monitoring system that can locate a train at every instant. This thesis has proposed the implementation of a Radio Frequency system (RFID) based train monitoring system that could locate a train at every instant. Here a RFID module transmits the location information to the main station. Every track in the system will be assigned a unique number. Now this track position of the train is also transmitted with this location information via wireless XBee on the station. This main station continuously updates the track position when the train is moving from one station to another. This information is stored in the main station unit about trains arrival and departure information. When a train arrives particular station information will send to other stations. And pair of switches will be placed at a distance of crossing. So, when the train comes, the switch send signal to microcontroller in the gate unit the dc motor will close gate and traffic light will be red, and when the train passes above the another switch in left side , the gate will between open automatically This implementation can effectively reduce train accidents in Khartoum city.

تجريدة

النقل هو جزء كبير ومهم من اقتصاد البلاد؛ القطار هو أحد أنظمة النقل الرئيسية في السودان. لذلك، يجب أن يكون لدينا نظام مراقبة جيدة وقوية تمكننا من تحديد موقع القطار في كل لحظة. وقد اقترحت هذه الأطروحة تنفيذ نظام التردد الراديوي (RFID) القائمة على نظام مراقبة القطار ليتمكننا من تحديد موقع القطار في كل لحظة في المحطات. يتم التفاعل ونقل معلومات موقع القطار إلى المحطة الرئيسية. عن طريق تعيين رقم فريد في كل مسار. تنقل هذه المعلومات (زمن وصول القطار، زمن المغادرة، المحطة القادمة) إلى المحطة الرئيسية لتسهيل عملية الإدارة ولإعادة إرسال هذه المعلومات إلى باقي المحطات عن طريق الموجات اللاسلكية على متن المحطة. هذه المعلومات يتم تحديثها بصورة مستمرة من كل محطة يمر من خلالها القطار. مع وضع زوج من المفاتيح في السكة الحديدية على مسافة المعبر عند التقاطع مع الشوارع الرئيسية. لذلك، عندما يأتي القطار، فإن المفتاح يرسل إشارة إلى المتحكمة الدقيقة في وحدة البوابة ليتم تشغيل المحرك وإغلاق البوابة وعندها تكون الإشارة الضوئية حمراء، وعندما يمر القطار فوق المفتاح الآخر في الجانب الأيسر يرسل إشارة أخرى للمتحكمة الدقيقة فتعمل على تشغيل المحرك وتفتح البوابة لتتحول الإشارة الضوئية إلى اللون الأخضر لإرجاع حركة المرور من جديد مما يؤدي إلى الحد بشكل فعال حوادث القطارات في مدينة الخرطوم.

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