

DEDICATION

We dedicate this research with much love and appreciation;

To my family. Words cannot express how grateful am I to my mother and my father and my brother Mohyeldeen and my sister Ebtesam for all of the sacrifices that you've made on my behalf. Your prayer for me was what sustained me this far.

A special Dedication, I would like to extend my warm appreciation to my fiancée Mihad Faisal and her mother DR. Hanan Mohammed for their encouragement and support; they have strongly motivated me throughout the years that keep me moving forward.

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ABSTRACT

Everything in the modern human life has undergone rapid development. This development is supported by the advance of electronics and information technology.

This research develops a wireless flow monitoring system for Nile River by using the concept of the ultrasonic waves. The proposed system automatically sense the water level and then send these level values to the control room through a wireless radio frequency subsystem.

An electronic circuit has been designed and then constructed to build this system. The wireless subsystem consists of two modules, transmitter and receiver. The Transmitter module detects a collection of water levels and transmits these data to the receiver module as a database collection. The Receiver module then displays the data on a LCD monitor. Besides, a set of display LEDs has been built to display the received data level status as a scale (safe, medium critical and risky). The data level decision done depending on old database measurements. If the water level changes rapidly this considered as a dangerous, and the system will activate a buzzer to generate sound alarm.

When testing the circuit for detecting the water levels in sending and receiving the data, the results are accurate and reliable. These results encourage us to use the application to avoid the flood disaster.

المستخلص

كل شي في حياة الانسان الحديثة يخضع لتطور سريع, هذا التطور مدعوم بتقدم في الالكترونيات وتقنية المعلومات.

هذا البحث يصمم نظام مراقبة لمستوي الماء لاسلكيا باستخدام مفهوم الموجات الفوق الصوتية. النظام المقترح يتحسس أليا مستوى الماء ويقوم بارسال قيم هذا المستوي الي غرفة تحكم خلال نظام فرعي بتردد الراديو اللاسلكي. الدائرة الالكترونية صممت ومن ثم ركبت لبناء هذا النظام.

النظام الفرعي اللاسلكي يتألف من نموذجين, الارسال والاستقبال. نموذج الارسال يكتشف مجموعة من مستويات الماء وارسال هذه البيانات الي نموذج الاستقبال كقاعدة بيانات مجمعه. نموذج الاستقبال يقوم بعرض البيانات في شاشة مراقبة. بجانب, مجموعة من الثنائيات لعرض حالات مستوى البيانات المستقبلية كمقياس (آمن, وسط حرج, خطر). اتخاذ قرار في مستوى البيانات يعتمد علي قياسات قاعدة البيانات القديمة. اذا تغير مستوى الماء سريعا هذا يعتبر خطورة, والنظام سوف ينشط الجرس لتوليد انذار صوتي. عند اختبار الدائرة لاكتشاف مستويات الماء في ارسال واستقبال البيانات كانت النتائج اكثر دقة واعتمادية, هذه النتائج شجعتنا لاستخدام التطبيق لتجنب كوارث الفيضان.

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List of Abbreviations

U.S	United State
RAM	Random Access Memory
ROM	Read Only Memory
EEPROM	Electrical Erase Programmable Read Only Memory
PWM	Pulse Width Modulation
ASK	Amplitude shift keying
VREF	Reference Voltage
IDE	Integrated Development Environment
IC	Integration Circuit
TTL	Transistor-Transistor Logic
PCB	Printed Circuit Board
LCD	Liquid Crystal Display
LED	Light Emitting Diodes