Dedication

To my two halves... and my whole life...

My parents

To my sores and sweets sharers...

My brothers and sisters

To my daylight

My teachers

To my friends...

Acknowledgement

I would like very much to thank my supervisors, **Dr. Kasim M. Al-hity** and **Prof. Saad Dauod**, for their patience, kind and wise guidance, and their invaluable comments during the whole work stages on this thesis. They were always behind me encouraging, supporting, advising, and taught me dedication, persistence, and how to make an aim and how to find the ways for it.

Special thanks to **prof. Nafia Abdellteef**, for his kind follow up and invaluable and deep will in help and the precious time and knowledge he powered us.

I want to head a special thank to my brother **Dr. Magdi Hassan**, for his sincere will of help everyway he could.

Finally I would like to thank all the staff in the Institute of Laser, Sudan University of Science & Technology, and my all batch mates.

ABSTRACT

This project aimed to design and construct a control system uses 6 digital codes, which is done by using 8 PINs DIP switch to generate 8 bits digital code. This code had been modulated by a microcontroller adopting (OOK) amplitude modulation; the Bit duration is 25ms where all that was done by a source code programmed in C language and installed on the microcontroller. Also the microcontroller granted to do another function where it converts the signal from its parallel generated form into a serial form after modulation which is then carried-out into the form of an optical signal using a laser light source and it was transmitted and carried on an optical fiber cable to the receiver.

On the other side, the receiver received the signal through an LDR which converted it from its optical form into an electrical signal form and as its characteristics was expected to be weak the signal was subjected to a amplification phase which after it was demodulated using a microcontroller where it also converted the serial signal onto a parallel form and showed it using LEDs.

الخلاصة

هدف هذا البحث العملي إلي تصميم و بناء منظومة تحكم تعتمد فى عملها على توليد (6) إشارات شفرات رقمية، وقد تمت هذه العملية بتوليد شفرات مكونة من ثمانية بتات (8 bits code) بواسطة مفتاح (DIP switch) ومن ثم تضمينها (Modulation) الأمر الذي تم باستخدام متحكم دقيق (Microcontroller) حيث إن التضمين المتبني كان طريقة التضمين السعوي الرقمي من نوع (فتح–إغلاق) (OOK-AM) بزمن إبقاء 25 ملي ثانية لكل بت (Bit duration 25ms) وقد تم هذا من خلال برنامج تمت كتابته بلغة C وتم تحميله علي المتحكم الدقيق، كما أن المتحكم يقوم أيضا بعملية تحويل إشارة الشفرة من الشكل المتوازي إلي إشارة متسلسلة (Parallel to serial conversion). بعد عملية التضمين تم نقل الإشارة لتتم تهيئتها لتتوافق مع تضمينها و إرسالها علي هيئة إشارات ضوئية من خلال مصدر ضوء ليزري بغرض حملها عن طريق ليف بصري حتى يتثن ي الاستفادة منها عند المستقبل (The receiver).

عند المستقبل تم تحسس الإشارة الضوئية بواسطة مقاومة ضوئية و من ثم إمرارها إلي مرحلة تقوية للإشارة و إدخالها علي متحكم دقيق قام بعملية فك تضمينها (Demodulation) وإعادة الإشارة من شكلها المتسلسل الذي تم استلامها به إلي إشارة متوازية كتلك التي تم توليدها أولا و من ثم تم عرضها من خلال ثنائيات مضيئة (LEDs).

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