

الاية

قال تعالى:

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(اللهُ نُورُ السَّمَاوَاتِ وَالْأَرْضِ ۖ مَثَلُ نُورِهِ كَمِشْكَاةٍ فِيهَا مِصْبَاحٌ ۚ الْمِصْبَاحُ فِي زُجَاجَةٍ ۚ الزُّجَاجَةُ كَأَنَّهَا كَوْكَبٌ دُرِّيٌّ يُوقَدُ مِنْ شَجَرَةٍ مُبَارَكَةٍ زَيْتُونَةٍ لَا شَرْقِيَّةٍ وَلَا غَرْبِيَّةٍ يَكَادُ زَيْتُهَا يُضِيءُ وَلَوْ لَمْ تَمْسَسْهُ نَارٌ ۚ نُورٌ عَلَى نُورٍ ۗ يَهْدِي اللهُ لِنُورِهِ مَنْ يَشَاءُ ۗ وَيَضْرِبُ اللهُ الْأَمْثَالَ لِلنَّاسِ ۗ وَاللَّهُ بِكُلِّ شَيْءٍ عَلِيمٌ)

صدق الله العظيم

سورة النور اية (35)

الإهداء

إلى من أحمل اسمك بكل فخر
يا من يرتعش قلبي لذكرك
يا من أودعتني الله أهديك هذا البحث أبي
إلى حكمتيوعلمي
إلى أدبيوحلمي
إلى طريقي المستقيم
إلى طريق..... الهداية
إلى ينبوع الصبر والتفأول والأمل
إلى كل من في الوجود بعد الله ورسوله أمة الغالية
إلى سندي وقوتي وملاذي بعد الله
إلى من أثروني على أنفسهم
إلى من علموني علم الحياة
إلى من أظهروا لي ما هو أجمل من الحياة إخوتي
إلى من كانوا ملاذي وملجئي
إلى من تذوقت معهم أجمل اللحظات
إلى من سأفتقدهم وأتمنى أن يفتقدوني
إلى من جعلهم الله أخوتي بالله و من أحببتهم بالله طلاب قسم الكهرباء

ACKNOWLEDGMENTS

First of all, giving thanks of Allah. Word fail to describe our gratitude of our supervisor Dr. Giddani Osman Addalan For his guidance and help during our research at Sudan University of science and technology.

We can't forget giving thanks to everyone who help us and gave us a new hope for successful.

Finally we are gratefully acknowledges the support of the lectures and all the staff of Sudan university's school of Electrical Engineering for all what they offered throughout our educational path in university.

ABSTRACT

Computer numerical control machine provide automatic and precise motion control via special programming language called G-code to its elements such as work table and tool spindle with the aids of servo motor and the stepper motor.

the operation of the stepper motor depends on the digital signal is sent from the controller to the motor in the form of pulses as to rotate the motor which is converted to linear movement by the lead screw, As the distance moved by the slide and the feed can be accurately controlled by the computer numerical control machine control system.

Servo motor which we are focused to study, the servo motor requires both positional and velocity feedback, which means that the actual position and velocity of the slideway is continuously compared to the digital signal that is being sent out by the controller.

مستخلص

ماكينات التحكم الرقمي عن طريق الحاسب تجهز هذة الماكينات تحكم دقيق في الحركة لبقية اجزائها مثل الطاولة ومعدة الدوران المحوري وذلك عن طريق لغة خاصة مستخدمة لهذه الماكينات تسمى بلغة الجي كود بمساعدة محرك السيرفو ومحرك الخطوة.

نجد ان محرك الخطوة يعتمد عمله علي إرسال إشاره رقمية من المتحكمة الي المحرك في شكل نبضات لدوران المحرك حيث يتم تحويل هذة الحركة الي حركة خطية حيث يتم التحكم في الوضع عن طريق التحكم في نظام ماكينات التحكم الرقمي عن طريق الحاسب .

أما محرك السيرفو هو محط دراستنا حيث يتطلب تغذية عكسية لكل من السرعة والوضع مما يعني ذلك ان الوضع الحقيقي والسرعة بصوره مستمره يُقارنان مع الإشارات الرقمية التي تُرسل عن طريق المتحكمة.

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List of abbreviations

CNC	Computer Numerical Control
NC	Numerical Control
RAM	Random Access Memory
MCU	Machine Control Unit
MT	Machine tools
IC	Integrated Circuits
MDI	Manual Data Input
PTP	Point-to-point
TLO	Tool Length Offsets
USB	Universal Serial Bus
PM	permanent-magnet
DC	Direct current
EMI	electromagnetic interference
HED	Hall-effect devices
VR	Variable Reluctance
BLDC	Brush Less Direct Current
PWM	Pulse Width Modulation
SMPS	Switched mode power supply
CW	Clock Wise
CCW	Counter Clock Wise
EMF	Electromagnetic Field
PI	Proportional Integral
CAM	Computer aided manufacturing