Hardware Development of Auto Focus Microscope

Dwi Pebrianti 1,3, Rosyati Hamid 1, Faradila Naim 1, Mohd Falfazli Mat Jusof 1, Nurul Wahidah Arshad 1 and Luhur Bayuaji 2,3

1 Faculty of Electrical and Electronics Engineering, Universiti Malaysia Pahang, Malaysia
2 Faculty of Computer Science and Software Engineering,Universiti Malaysia Pahang, Malaysia
3Magister of Computer Science, Universitas Budi Luhur, Jakarta 12260, Indonesia
rosyati@ump.edu.my , dwipebrianti@ump.edu.my

Abstract:
The scientific instrument technology has growth faster than we all could imagine, there are many research team keeping their momentum in creating new innovation in scientific instrumentation technologies. The optical microscopes are still being used widely in the scientific research especially by researcher and medical practitioners. Manually deal with the microscope could make the user spend so much time to obtain the result of cleared image. It could cost hours to obtain the desire result. From this problem, this study proposes the development of hardware system for auto focused of an optical microscope. The proposed system consists of two stepper motors that will move the fine focus knob and the course focus knob on a microscope. The timing belts are being used as mounting between the stepper motor and the fine / course focus knob. The motor will moves step by step in same degree given from the command of a program. The motor are able to be controlled and it moves slowly to perform an auto focus task. Additionally, it is able to move in a small angle to find the proper exposure of the images scan. The hardware implementation of auto focus on the optical microscope has been tested and it worked perfectly. The result presented in this study shows that the proposed system is able to do auto focus in precise step which is 5° step.

Keywords : Motor Control; Auto Focus; Optical Microscope

Acknowledgment

This works is supported by Universiti Malaysia Pahang (UMP), under Universiti Malaysia Pahang Research Grant RDU 1703142.