ABSTRACT

A. Abd. Jabbar, *A Multiprocessor-based Monitoring and Control System* (supervised by **Zahir Zainuddin** and **Rhiza S. Sadjad**)**.**

This is a design project to build a multiprocessor-based monitoring and control system. Three (can be more) micro-controllers are inter-connected through a TCP/IP bus topology using a gateway module interfacing their serial devices and the Ethernet connection.

The microcontrollers are programmed using the assembly programming language, inter-connected to each other in a bus topology by the RS-485 serial interface through the gateway module. A personal computer running an application program developed using Visual Borland Delphi 7 programming language is set up to serve as the monitoring and control center. The personal computer communicates with all microcontrollers using the TCP/IP data packet communication protocol.

Sensors are represented by 4 (four) potentiometers to generate measurable voltages monitored by each microcontroller, and the controlled plant is represented by 8 (eight) Light Emitting Diodes to be turned ON and OFF. The clock frequency is 7.3728 MHz to set the baud rate of 115200 bps. The minimum sampling period for data acquisition from each microcontroller to the personal computer is 100 ms. The system has been tested for 200 meter cable transmission connecting the TCP/IP-UART converter at the personal computer side to the microcontrollers.