DEVELOPING AND TESTING OF ULTRASONIC OBSTACLE DETECTION SENSOR WITH INTEGRATION INTO THE OVERALL SAFETY FEATURES ON INDUSTRIAL AUTOMATED GUIDED VEHICLE

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Referring ANSI/ITSDF B56.5 – 2012 as a safety standard regulation for industrial AGV discuss about object detection device, bumper, control actuation and controlled stop switch. Object detection device and bumper are meant to be fail-safe system to prevent collision between AGV and obstruction. Analog ultrasonic sensor are used as object detection device while the safety bumper designed to trigger stop mechanism. Analog ultrasonic sensor are calibrated first to gain its analog output and sensitivity data. Safety bumper construction are to be made only for emergency situation purpose such as safety stop and activate braking mechanism. Object detection device are designed to decrease AGV speed in 2 decreasing speed zone and 1 stopping zone. Installed ultrasonic sensor able to reduce AGV speed should any object appear in designated range and stop motor actuation when in stop zone. Bumper are able to stop AGV when applied a force more than its preloaded value.

Keywords: Object detection device, bumper, ultrasonic sensor, AGV

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DEDICATION

I dedicate this thesis to myself.

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