

**SPHERICAL WHEEL – CONTROL AND ELECTRICAL**

By

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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

SPHERICAL WHEEL – CONTROL AND ELECTRICAL

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A spherical wheel is a type of wheel with the shape of a ball rather than the usual more radial shape wheel used in automotive. With a round surface, a spherical will give more agile movement and shorter movement path. Recent studies on the spherical wheel, or ballbot, had been researched, such as by Tohoku Gakuin University and Carnegie Mellon University.

Various purposes of a spherical wheel include the development by Goodyear in 2016 to create a spherical Maglev tyres. This thesis will try to develop the electrical and speed control of motors placed on a ball and then be able to rotate the ball which will create movement. This thesis focuses more on the electrical aspect, while the mechanical structure will be described in other thesis which create the mechanical part structure design for this project. This thesis work will be using Arduino, a microcontroller, to control the drivers that will actuate the motors in synchronized speed in order to drive the ball to any angle, except its own axis. The input will be a joystick module, where the joystick computes the angle desired which will then be transmitted to Arduino to drive the motors and the ball.

*Keywords: Spherical Wheel, Ballbot, BLDC, Arduino.*



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## **DEDICATION**

I dedicate this thesis works to my parents, my sisters and my dear friends who have always been supportive and caring during the work of this thesis.



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