

**DESIGN AND PERFORMANCE ANALYSIS OF A CVT-BASED HYBRID GO-KART
DRIVETRAIN USING A 110CC INTERNAL COMBUSTION ENGINE AND
ELECTRIC MOTOR: POWER TRANSMISSION FROM CVT TO DRIVE WHEELS**

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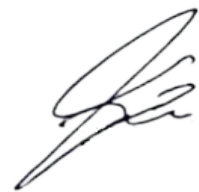
STATEMENT BY THE AUTHOR

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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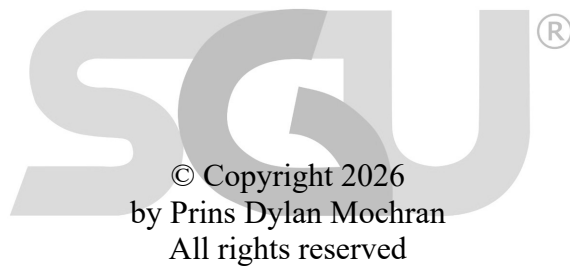
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This thesis investigates the design and experimental performance of a mild hybrid go-kart that combines a Honda Beat 110 cc CVT engine with a YALU BM1109 2000 W BLDC motor in a parallel drivetrain configuration. The study aims to improve launch acceleration and braking performance relative to an engine-only baseline and to verify that regenerative braking returns measurable energy to the traction battery. Both power sources drive a solid rear axle through independent chain and sprocket sets, while a Votol EM50S controller governs motor torque and regenerative braking. Performance is evaluated on a flat concrete track using 0–10 m and 0–20 m acceleration tests, 400 m lap tests with fuel consumption measurement, and emergency braking distance tests. Over 400 m runs, hybrid operation shortens average lap time by 14.37% while using 3.28% less petrol and reduces emergency braking distance by 5.85%. Regenerative braking returns approximately 43.2 J per braking event, about 0.62% of the kinetic energy at 30 km/h, demonstrating that a simple mild hybrid configuration with low-cost components can deliver measurable performance gains and energy recovery in a small go-kart platform.

Keywords: mild hybrid, go-kart, CVT, BLDC motor, regenerative braking



DEDICATION

I dedicate this work to God, my family and friends, and the betterment of
the environment.



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