

West Visayas State University  
COLLEGE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY  
Ia Paz, Iloilo City

Graduate School

SOLAR AUTONOMOUS VEHICLE WITH ENHANCED CHARGING MECHANISM  
BASED ON REGRESSION ALGORITHM FOR AGRICULTURAL APPLICATION

A Master's Thesis

Presented to the Faculty of the  
College of Information and Communications Technology  
West Visayas State University  
Iloilo City, Philippines

In Partial Fulfillment  
of the Requirements for the Degree  
Master in Information Technology

by:

Paul Marlou C. Subong

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Approval Sheet

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Approved:

BOBBY D. GERARDO, Ph.D.  
Adviser/Graduate School Coordinator

MA. BETH S. CONCEPCION, DIT  
Panel Member

FRANK I. ELIJORDE, Ph.D.  
Panel Member

EVAN C. SUMIDO  
Panel Member

PETER REY DURAN  
Panel Member

JOEL T. DE CASTRO, DIT  
Dean

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Paul Marlou C. Subong, "Solar Autonomous Vehicle with Enhanced Charging Mechanism Based on Regression Algorithm for Agricultural Application" Published Graduate School Thesis, Master in Information Technology, West Visayas State University, Iloilo City, Philippines, October 2018.

Abstract

Factors like sunlight, current drawn and voltage were considered as triggers in the ability to efficiently charge storage batteries and in line with the type of charging algorithm to be used either Pulse Width Modulation (PWM) or Maximum Power Point Tracking (MPPT) techniques. Thus, these provide ways of choosing appropriate algorithm for optimized charging in a given state of charge of the batteries especially for solar vehicle where it is usually changing positions; thus affect charging capabilities. Solar controllers functions differently such as the MPPT and the PWM solar controllers, which current drawn from the PV cells to the voltage storage to the batteries. Research and tests were conducted which solar controller to be use in such conditions. The researcher used Regression Algorithm to determine which of the two would charge the batteries better and optimally operates the mechanism and prolongs the battery life in such weather conditions. This study brought and modified a full

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scale electric motorized vehicle. Aside from mechanized machineries, the system can also be incorporated to some other systems that uses solar power.

Keywords: Solar Power, Pulse Width Modulation(PWM), Maximum Power Point Tracking(MPPT)

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