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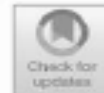
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Contents

Design and Development of an Autonomous Underwater Vehicle for Underwater Target Navigation Mission Module	55
Muhammad Muzakkir Ahmad Roslan, Herdawatie Abdul Kadir, Khalid Isa, Radzi Ambar, Mohd Rizal Arshad, Maziyah Mat Noh and Mohd Helmy Wahab	
Development of an Autonomous Underwater Vehicle for Target Acquisition	65
Leong Wai Lunn Alexander, Khalid Isa, Herdawatie Abdul Kadir and Radzi Ambar	
Robust Controller Design for Autonomous Underwater Glider Using Backstepping Super Twisting Sliding Mode Control Algorithm	79
Maziyah Mat Noh, M. R. Arshad, Rosmiwati Mohd-Mokhtar, Zainah Md Zain, Qudrat Khan and Herdawati Abdul Kadir	
PSPHT-II: A Water Strider-Like Robot with Cylindrical Footpad	99
Vi Vi Gan, Addie Irawan, Niirmel Ranjanendran and Siti Noor Zuliana	
An Accurate Characterization of Different Water Properties Using Resonant Method for Underwater Communication Activity	113
Salwa Awang Akbar, Ahmad Syahiman Mohd Shah, Ainul Sharizli Abdullah, Nurhafizah Abu Talip Yusof, Sabira Khatun, Syamimi Mardiah Shaharum and Mohamad Shaiful Abdul Karim	
Statistical Relationship Between Multibeam Backscatter, Sediment Grain Size and Bottom Currents	121
Mohd Azhafiz Abdullah, Razak Zakariya and Rozaimi Che Hasan	
Part II Control, Instrumentation and Artificial Intelligent Systems	
Stabilization of Two-wheeled Wheelchair with Movable Payload Based Interval Type-2 Fuzzy Logic Controller.	137
N. F. Jamin, N. M. A. Ghani, Z. Ibrahim, M. F. Masrom and N. A. A. Razali	
Stabilization Control of a Two-Wheeled Triple Link Inverted Pendulum System with Disturbance Rejection	151
M. F. Masrom, N. M. Ghani, N. F. Jamin and N. A. A. Razali	
Integration of PI-Anti-windup and Fuzzy Logic Control with External Derivative Solution for Leg's Robot Angular Joint Precision	161
Wan Mohd Nafis Wan Lezaini, Addie Irawan	

Design and Development of an Autonomous Underwater Vehicle for Underwater Target Navigation Mission Module



Muhammad Muzakkir Ahmad Roslan, Herdawatie Abdul Kadir, Khalid Isa, Radzi Ambar, Mohd Rizal Arshad, Maziyah Mat Noh and Mohd Helmy Wahab

Abstract The Autonomous Underwater Vehicles (AUV) industry is growing dramatically with the increase in the reliability and technical abilities of these vehicles. The vehicles require autonomous guidance and control system in order to perform underwater tasks. The Target Navigation Mission Module (TNMM) permits the vehicle to follow preprogrammed trajectories wherever and whenever required. Without this module, the vehicle will not be able to achieve the desired mission. In this work, the Mission module were able to identify the task, detect the target, coordinate the state of AUV (attain desired height and yaw angle) and makes decision on path based on mission time elapsed. The Target Navigation Mission Module used the Kalman Filter algorithm to estimates the state of a system during the navigation. The results shows a reliable reading obtain by the AUV. Therefore, better decision on motion direction were achieved. The AUV was able to navigate underwater and track underwater object without the need of operator assistance.

Keywords Autonomous Underwater Vehicles · Navigation · Kalman Filter

1 Introduction

AUVs exhibit an interestingly difficult navigational issue since they work autonomously in a highly unstructured condition where satellite-based navigation

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