Design and Development of Spherical Amphibian Vehicle (SAV)

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Abstract Spherical Amphibian Vehicle (SAV) is a spherical robot that is capable of operating in two different environments which are terrestrial and underwater. SAV has a wide range of applications in scientific research and military activities such as ocean exploration and search and rescue missions. However, motion control of a spherical robot is a very challenging task because of the nonlinearity of the robot system, time-variance, uncertainty external disturbances and difficulty in hydrodynamic modelling. This project is focused on building a SAV that is cost-efficient and able to function on land and underwater. The designed robot is a 2 degree of freedom (DoF) movement that can move forward/reverse and left/right direction. It uses one DC motor and one servo motor to actuate the forward/reverse motion and sideways (left/right) motion, respectively. Arduino UNO is selected to be used as a microcontroller due to its effectiveness and low cost. The spherical amphibian robot is designed with Arduino bluecontrol interface.

Keywords Spherical amphibian vehicle · Two degrees of freedom · Arduino bluecontrol interface

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K. Isa et al. (eds.), *Proceedings of the 12th National Technical Seminar on Unmanned System Technology 2020*, Lecture Notes in Electrical Engineering 770,
https://doi.org/10.1007/978-981-16-2406-3_1