

Hybrid Simulation of a Distributed Control System for the "C-SCOUT" Autonomous Underwater Vehicle (AUV)

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Abstract: The benefits of distributed control systems have been clearly demonstrated in various applications. The authors have extended this concept to the development of a distributed control architecture for the autonomous underwater vehicle "C-SCOUT". This control system, dubbed Distributed Embedded Modular Architecture (DEMA) has shown significant benefits with regards to robustness, reduced power consumption, size efficiency and cost effectiveness. Further to this, the modular nature of the system fits into a larger framework, allowing for enhanced system simulation, configuration flexibility and "hardware-in-the-loop" development. These features are a natural extension of the DEMA controller and result in more efficient development, and ease of troubleshooting, while providing a flexible platform for further research and development. Future work will focus on further refinement of the data interfaces and enhanced hybrid simulation.