

Editorial Notes

Most of our world lies beneath the sea, so it has been common understanding that understanding the secrets of our oceans is the key to understand our world. And by understanding our world, we have the opportunity to manage it, engineer it for the benefits of humankind. And while most scientists and engineers aspire to that ideal, deep sea exploration and research related to it are still considered limited compared to other area of research. The vastness of water mass that covers the ocean creates a massive barrier in the form of ever increasing pressure and visibility drop on anything under the surface. For this reason, underwater explorations have been limited to short term deployment in certain area; most of them still require human operators.

New approaches have been devised to answer this challenge. One approach is to substitute manned fleet of exploration vessels with autonomous unmanned vessels. In the absence of human operators, deployment cost is expected to be much lower, and large scale deployment will be feasible. Based on this approach, Ulmer proposed a platform of fully-autonomous system for underwater vessels that has capacity for rapid and long endurance deployment for large scale ocean monitoring. With no requirements to provide life support for human operators on board, this platform will have more of its resources allocated for essential equipment for its mission.

Another approach is by developing underwater vessels that behave like sea creature in their movement. This approach is driven by belief that natural creatures survive the natural selection by how they live efficiently in their respective environment. With no doubt, developing a controller that produces such behavior for underwater vessels is challenging in its own right. Lagor et.al designed a control method for a robotic fish to perform autonomous flow speed estimation and to perform autonomous upstream self-orienting (rheotaxis). Rheotaxis is known to be an efficient way for fish to maintain its position in a water stream, so it is very essential capability for an autonomous underwater vessel.

Meanwhile, technology using UAV applications have seen great progress for the last decades. They range from military applications such as surveillance, reconnaissance, search-and-destroy, and so on; and from non-military applications such as environment observations, disaster damage assessment, search-and-rescue, airborne patrol, and so on. Among those of non-military applications, and beside recreational purposes, very little has close interaction with the day-to-day life of our society. Such application can be the application of UAV flights for transporting goods from the producing area to the demanding area. And it is very likely that some other applications using UAVs will require indoor flights. Some works have been done to deal such possibilities and the works by Srigrarom and Iwata are only the two that do just that.

Iwata designed and developed an autonomous cargo UAV prototype for delivering cargo in urban environment. Other than portability, his design emphasizes the capability to perform low velocity cruise, to take-off and land on limited ground space, and to have high standard of safety for its operators and the cargo. An interesting scheme of airborne cargo transportation system that will be supported by such kind of UAVs is reviewed.

On separate work, Srigrarom's work deals with image processing program for object detection purpose on autonomous micro-aerial vehicles. This program is essential for autonomous indoor flights since access to GPS signal will not be available. The program is built using tools that is widely available. In the final paper, Sonobe et.al. presents a novel feedback control for helicopter slung load system using delayed feedback. The study highlight the contribution in the transportation system where the authors provide a method to suppress vibration of a slung long by mounting a simple angle measuring device used for the feedback.

Lastly, we present a short communication by Harno. This short communication reviews the work of Wahyudie et.al. titled "Robust PID Controller for Quad-roots", which was published on this journal's previous volume.

I would like to thank all the authors for the effort and contribution. I am hoping that the readers would find this present issue insightful, stimulating and useful.

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