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Research on practical robotics and mechatronics -Marine, Aviation and Medical Applications

Prof. Ikuo Yamamoto

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The author has developed many practical robotics and mechatronics specially in fields of marine, aviation (incl.space),and medicine. Advances in robotics and mechatronics for marine, aviation, space, and medicine are described to promote creation of new technologies in the future research and development of remotely operated underwater vehicles (ROV), autonomous underwater vehicles (AUV), multi-rotor aviation robots (drones), etc. And, life-like swimming robotic fish (seabream, shark ray, dolphin, etc.) are introduced in the presentation. Also, new medical instruments based on robotic fish technologies and a wrist rehabilitation robot for patients which have proven to be useful in medical field are explained. In addition, a rapid red tide inspection system for fish farms using an aviation IoT system is mentioned. Finally, offshore energy utilization systems based on robotics in Nagasaki sea area are described.

References:

Ikuo Yamamoto, Practical Robotics and Mechatronics, IET Control, Robotics and Sensors Series99, ISBN978-1-84919-968-1, 2016

Experience:

Dr. Ikuo Yamamoto is Professor of the Graduate School and Director of Division of Marine Energy Utilisation, Organization for Marine Science and Technology at Nagasaki University in Japan. His areas of work include the development of Autonomous Underwater Vehicle (Leader of AUV “Urashima”, which established a world record for autonomous cruising in February 2005), Remotely Operated Vehicle (Champion in underwater vehicle competition of Techno ocean world convention in 2012 and Okinawa offshore robotics contest in 2014, 2015, 2016; “Kaiko”, 10000m deep cruising in 1995), Robotic fish (the first life-like sea bream robotic fish was created in 1995, followed by a dolphin, sea ray, coelacanth, carp, etc.).

Professor Yamamoto held the post of Research Manager at Mitsubishi Heavy Industries where he was involved in projects which included the manufacture of the wings for the Boeing 787, multi -rotor aviation and real time monitoring and sensing system. His robotic space fish was trialled in the International Space Station in 2009 and he has worked on medical robots and instruments used for surgery and rehabilitation based on biological engineering technologies. He has published over 300 papers, books, patents, and has won several awards at international conferences. Also, he also received an a GlobalScot award from the Scotland government in 2017.