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| <i>Kurt Hansen, Mike Inman, Michael Cerne, John Natale</i> | |
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| <i>Itaru Kawama, Tsuyoshi Yoshiume, Takashi Murashima, Yoshiji Imai, Toshiaki Sakurai, Kazuhisa Ito, Norihide Wakita, Atsushi Uchihara</i> | |
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| <i>Megan Campbell, Ole Varmer</i> | |
| Improving Navigational Accuracy for AUVs using the MAPR Particle Filter | 1942 |
| <i>Andrew Lammas, Karl Sammut, Fangpo He</i> | |
| Implementation and Test of ISIMI100 AUV for a Member of AUVs Fleet | 1950 |
| <i>Fill-Youb Lee, Bong-Huan Jun, Pan-Mook Lee, Kihun Kim</i> | |
| Autonomy Based Modelling for the Simulation of Ocean Remote Sensing | 1956 |
| <i>Marc Parenthoën, Zakaria Belemaalem</i> | |
| Fully Coupled 6 Degrees-of-Freedom Control of Autonomous Underwater Vehicles | 1963 |
| <i>Matthew Kokegi, Fangpo He, Karl Sammut</i> | |
| Positioning Control of an Underactuated Surface Vessel | 1970 |
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| Prediction of Impacts of Discharged Dissociated Water in Methane Hydrate on Environment | 1975 |
| <i>Itsuka Yabe, Yasufumi Ishihara, Kazuhito Asano</i> | |
| USS: An Underwater Self-reconfigurable System | 1979 |
| <i>Chao Wu, Tong Ge, Lian Lian</i> | |
| Unmanned Underwater Vehicles Oceanic Engineering Society Technology Committee: | 1986 |
| <i>Claude Brancart, Hanumant Singh</i> | |
| The Chesapeake Bay Interpretive Buoy System | 1992 |
| <i>Doug Wilson</i> | |
| The MARES AUV, a Modular Autonomous Robot for Environment Sampling | 1996 |
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| | |
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| <i>Jonathan Shusta, Lee Freitag, Jim Partan</i> | |
| Technology of Water Flow Measurement Represented by Thirty Years of CMTC Workshops | 2009 |
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| <i>Dimitra Panagou, George Karras, Kostas Kyriakopoulos</i> | |
| Autonomous Sailboats: an Emerging Technology for Ocean Sampling and Surveillance | 2091 |
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