Lecture Notes in Electrical Engineering 666

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Dwi Pebrianti · Mahfuzah Mustafa ·
Nor Rul Hasma Abdullah ·
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NUSYS'19

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Preface

The National Technical Seminar on Unmanned System Technology 2019 (NUSYS'19) was organized by the IEEE Oceanic Engineering Society (OES) Malaysia Chapter and Malaysian Society for Automatic Control Engineers (MACE) IFAC NMO. NUSYS'19 was held during December 2–3, 2019, at Universiti Malaysia Pahang, Gambang Campus, Kuantan, Pahang, Malaysia, with a conference theme "Unmanned System Technology and AI Applications". The event was the 11th conference continuing from previous conferences since the year 2008. NUSYS'19 focused on both theory and application, primarily covering the topics of intelligent unmanned technologies, robotics and autonomous vehicle. We invited four keynote speakers who dealt with related state-of-the-art technologies including unmanned aerial vehicles (UAVs), underwater vehicles (UVs), autonomous vehicles, humanoid robot and intelligent system, among others. They are Mr. Kamarulzaman Muhamed (Founder and CEO Aerodyne Group, "*CEO of Top 10 hottest start-up company by Nikkei Japan*, May 2019"), Assoc. Prof. Dr. Hanafiah Yussof (Founder, Board of Director and Group Chief Officer of Robopreneur Sdn. Bhd.), Assoc. Prof. Dr. Hairi Zamsuri (General Manager eMoovit Technology Sdn. Bhd.) and Mr. Mohd Fairuz Nor Azmi (Project Manager, Fugro Malaysia Marine Sdn. Bhd. formerly known as Fugro Geodetic Malaysia Sdn. Bhd.). The objectives of the conference are threefold: to accommodate a medium to discuss a wide range of unmanned system technology between universities and industries, to disseminate the latest technology in the field of unmanned system technology and to provide an opportunity for researchers to present their research paper in the unmanned system technology area.

Despite focusing on a rather specialized area of research concerning unmanned system technology and electrical and electronics engineering technology, NUSYS'19 has successfully attracted 87 papers locally from 12 universities and one internationally from Institute Technology Surabaya, Indonesia. This volume of proceedings from the conference provides an opportunity for readers to engage with a selection of refereed papers that were presented during the NUSYS'19 conference. The book is organized into four parts, which reflect the research topics of the conference themes:

Part 1: Unmanned System Technology, Underwater Technology and Marine
Part 2: Applied Electronics and Computer Engineering
Part 3: Control, Instrumentations and Artificial Intelligent Systems
Part 4: Sustainable Energy and Power Electronics.

One aim of this book is to stimulate interactions among researchers in the areas pertinent to intelligent unmanned systems of AUV, UAV and AGV, namely autonomous control systems and vehicles. Another aim is to share new ideas, new challenges and the author's expertise on critical and emerging technologies. The book covers multifaceted aspects of unmanned system technology.

The editors hope that readers will find this book not only stimulating but also useful and usable in whatever aspect of unmanned system design in which they may be involved or interested. The editors would like to express their sincere appreciation to all the contributors for their cooperation in producing this book.

We wish to take the opportunity to thank all individuals and organizations who have contributed in some way in making NUSYS'19 a success and a memorable gathering. Also, we wish to extend our gratitude to the members of the IEEE OES Malaysia Chapter Committee and Organizing Committee for their tireless effort. Finally, the publisher, Springer, and most importantly, Mr. Karthik Raj Selvaraj for his support and encouragement in undertaking this publication.

Editors

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