# Editorial Notes

Innovation is the only pathway for manufacturer, visionary and scholars, to improve the quality of human beings daily life. This is where robotics and mechatronics engineering has been adopted since 1984, as one of the most pioneering solutions to many of our industrial challenges. The distinction about such resolution is its flexibility to meet the well-known innovation platforms, i.e. empowering, sustainable and efficient innovation. It's the creatively of applied research to implement some superintendent roles rather than creation ones. Industrial market has become very challenging to secure businesses, maintain products development, and sustain its growth, since it is not any more about knowledge and existing know-how. It is nowadays about what industrialist can embed into their evolving products using cutting edge emerging technology and how they manufacture it. This is where the International Journal of Robotics and Mechatronics (IJRM) will play a vital role, through the exchange of the innovative ongoing research and development in this area of intelligence and automation across the world. The first issue of the IJRM Journal presents selection of high standards research and development papers that bring together the latest ongoing and developed endeavours.

The first paper by Takahiko Nakamura and Satoshi Suzuki (Tokyo Denki University, Japan) focused on childcare service and presented an automatic method to develop an indoor mapping system using the SLAM technique. The outcomes of this research introduce a novel automation system to maintain good childcare service and support kindergarten staffs using objective monitoring system. The paper by Masafumi Miwa and Sinya Marubashi (Institute of Technology & Science, The University of Tokushima, Japan) presents an innovative 3-axes Ducted Fan Flying Object (DFO3) for Radio Controlled Unmanned Aerial Vehicle (UAV). UAV is mainly used in aerial photography and aerial investigation. The newly developed DFO3 equipped with normal and reverse rotation ducted fan and is to cancel the Gyro moment effect and provide the necessary industrial safety standards required. The development presents a real breakthrough and succeeded to achieve a stable take-off, landing and hovering.

The next papers deal with some of the existing industrial challenges in robotics and mechatronics engineering and provide a number of ground-breaking solutions, for instant: Takayuki Matsuo, et al, (Kitakyushu National College of Technology, Japan) presents a design method for a phase lag adjustment system using neural oscillators for a snake-like robot. The research offers a motion control system that enables a snake-like robot to adjust the phase lag of target joint trajectories according to changing environments. Mahmoud Shafik (College of Engineering and Technology, University of Derby, UK) presents the state of art of the latest development in Electro Discharge Machining (EDM) system technology. The paper covers the current and recent development using the electromagnetic and piezoelectric ultrasonic servo control feed drive technology. It also demonstrates how the ultrasonic technology renovates the EDM system and transfers its industrial applications into a new era. EDM process is one of the most common processes in automotive and aerospace industry. EDM is principally used to machine and process alloys and very hard materials for key manufacturing components, such as film cooling holes for Turbine Blades, engine strip sheets, steel sheets for automotive industry, outer vehicle body… etc. Murali Krishna (Intelligent Systems and Robotics Division, India) presents a biologically inspired Central Pattern Generator (CPG) based controller for a quadruped minimule robot. The CPG based minimule robot offers a real opportunity to realise both trot and walk gait by varying the phase relationship between the limbs and is stable due to the inherent property of CPG.

The final paper of this issue is focused in one of the 21$^{st}$ century renewable energy storage source challenge. It introduces a pioneering approach to optimise and minimise the cost of supercapacitor-battery. Chia Yen Yee, Niusha Shafiabady, Dino Isa (The University of Nottingham, Malaysia) presents an approach to optimise the size of a supercapacitor-battery hybrid energy storage system for solar applications using the Genetic Algorithm. The potential contribution of this approach is optimising the cost of the Supercapacitor-battery hybrid energy storage system in renewable energy system which cannot be solved in most of the commercial simulation tools, such as HOMER and HYBRIDS.

We hope that all of you find the issue inspiring beneficial and has also given you a good on-site of the ongoing research and development in this fascinating fast-moving area of innovation and technology. We look forward to receive your contribution to the future journal issues.

**Mahmoud Shafik**