Editorial

Osamah Ibrahim Khalaf

College of Information Engineering,
Al-Nahrain University,
Baghdad 64074, Iraq
Email: usama.ibrahem@coie-nahrain.edu.iq

Biographical notes: Osamah Ibrahim Khalaf is a Senior Engineering and Telecommunications Lecturer in Al-Nahrain University/College of Information Engineering. He has 15 years of university-level teaching experience in computer science and network technology and has a strong CV about research activities in computer science and information technology projects. He has had many published articles indexed in (ISI/Thomson Reuters) and has also participated and presented at numerous international conferences. He has a patent and has received several medals and awards due to his innovative work and research activities. He received his BSc from Iraq. Then, he obtained his MSc from Belarus. After that, he received his PhD Malaysia. He has overseas work experience obtained at Binary University in Malaysia and University Malaysia Pahang.

The role of this special issue is mainly focused on remote sensing and machine learning applications for environments. The rapidly increasing availability of multispectral, high spatial resolution imagery, collected by satellites, cubesats, and airborne sensors, presents an opportunity to detect landscape change, landuse landcover, surface temperature, nature disaster with increased spatial detail of research environment and applications. The research environment studies utilising data from several satellite imagery such as LANDSAT, WORLDVIEW, SPOT, LIDAR data, Sentinel and MODIS other satellite imagery. Today, a new generation of research environment studies using several satellite imagery with different spatial resolution based on research study through the capitalising on the availability of data from high spatial resolution global monitoring missions. For example, the unprecedented 45-year long global Landsat archive is increasingly used to analyse past and present global land and water changes, and higher temporal frequency global observations from Sentinel are enabling the use of dense high resolution time series for near real time monitoring. In addition to Sentinel and Landsat, data from other global Landsat-class missions are increasingly being integrated into virtual Earth observation constellations that further advance global land and water monitoring. These challenges all point to the need for improved image processing approaches specific to multispectral, high spatial resolution imagery. In this special issue, the methodological contributions in terms of novel machine learning algorithms as well as the application of innovative techniques to relevant scenarios from hyperspectral data.

On the other hand, the environmental modelling can be described as a simplified form of a real system that enhances our knowledge of how a system operates. Such models represent the functioning of various processes of the environment, such as: processes related to atmosphere, hydrology, and land surface, among others. In fact, environmental models may span a wide spectrum of geographic (i.e., from local to regional to global-levels) and temporal (i.e., diurnal to monthly to annual to decadal-levels) scale. They often integrates various aspects of the environment that can be described upon employing various types of models, such as process-driven, empirical or data-driven, deterministic, stochastic, etc.