

Editorial to Special Issue
Research Trends in IT-based Control Applications

On behalf of the Science and Engineering Research Support soCiety - SERSC, it is an honor for us to introduce you to this special issue, which includes a selection of the best papers presented at the 5th International Conference on Control and Automation (CA 2012), as well as other articles that cover topics of particular interest to researchers on the field of automatic control and information technology.

This issue contains 11 articles which come from various countries, among which we mention Japan, Taiwan, South Korea, Spain, China and Australia. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and external reviewers. We take this opportunity to thank them all for their great support and cooperation.

The objective of the paper "*Stabilizability Conditions for Switched Linear Systems with Constant Input via Switched Observer*" is to study the conditions for equilibrium points related to continuous-time switched linear systems with constant input to be globally asymptotically stable via switched observer. Firstly, the conditions for equilibrium points related to the switched linear system with constant input to be globally asymptotically stable via switched observer were presented. And two numerical examples to illustrate the main results were also shown, respectively.

In "*Development of Building Fire Control and Management System in BIM Environment*", a fire-control surveillance and management system was developed by incorporating fire prevention equipment into the building spatial model. With this system, when a detector is triggered, relevant monitors can be viewed immediately to rapidly determine the actual situation and verify the authenticity of the fire alarm. This function prevents false alarms that cause panic, distress and fatigue to relevant personnel.

In "*Temperature Characteristics Analysis of Braking Resistor for High Speed Train*", a new suggested model for a motor block braking resistor was suggested to prevent damages to the resistor wires due to the thermal expansion during regeneration braking in a high speed train. Resistors and insulators were added to the new braking resistor after considering the temperature increase in the conventional models due to the narrow resistors intervals, and the resistor temperature estimation through a component analysis confirmed that the temperature increase was less in the suggested model than in the conventional model. Moreover, the outstanding performance of the suggested model was confirmed via the temperature increase experiment.

In "*Application of Mobile Technology in Virtual Communities with Information of Conflict-Affected Areas*", authors proposed a conceptual model that enables the integration of different communities who have expertise that many communities that study the conflict in the Montes de Maria have. Mobile devices are used as sensors agents that allow each of the members of various communities to identify their respective positions in the territory, access relevant information according to location and continue capturing territorial information, becoming members of the communities in the cloud in sensor nodes communities.

In "*Intelligent Gauge Control System Using ARM and Fuzzy PI Controller*", authors designed an intelligent gauge control system with ARM chips and fuzzy PI controller. Authors insisted and showed that this system is more useful to keep the stability of the control system against the thickness errors than some traditional control systems. Besides, this system depends less on some accurate mathematical models of the control objects than the traditional ones.

In "*Fault Tolerance for Conjugate Gradient Solver based on FT-MPI*", authors discussed the process for the migration and restoration of multi-storage computing tasks by using a checkpoint algorithm based on the FT-MPI library for implementation in fault-tolerant grid computing. Authors presented a task migration and restoration model based on grid computing, wherein authors analyzed and compared the checkpoint storage method and checkpoint information encoding algorithm. Furthermore, authors presented a complete proof on the fault-tolerance feasibility of the Reed–Solomon algorithm.

The main objective of the paper "*Using Feature Selection and Classification Scheme for Automating Phishing Email Detection*" is to identify behavior-based features in phishing emails which cannot be disguised by an attacker. Authors considered analyzing the message-ID tag and sender email in order to mine the attacker's behavior. The result shows that the proposed hybrid feature selection approach is effective in identifying and classifying phishing email.

In "*Implementation of Context Aware based Robot Control System for Automatic Postal Logistics*", authors proposed a robot control system based on 'context aware' to automate parcel sorting in delivery logistics. The proposed robot control system creates 'pickup and drop' control information needed to control the robot operation for each parcel.

In "*Development of Quality Control and Breeding Management System of Goats Based on Information and Communication Technology*", authors proposed a next-generation information management system of animal production that utilizes information and communication technology such as RFID, cloud systems, and mobile communication network. Also, authors conducted operational test of the information system by using goat as a model for the target animal in order to

evaluate the requirements for the dissemination of the system and the remaining issues.

In "*Efficient Multi-Level Access Control for Geo-Contents Maintenance*", authors proposed multi-level access control using Delta Compress Algorithm and by granting access control based on usages and permissions of content, it prevents the illegal use of GIS data which will protect and maintain digital contents consistently. Multi-Level Access Control using Delta Compress proposed in this paper can be applied to all digital content in the same way and the same application is possible to Raster Image without additional work for file format.

In "*Theoretical Design and Analysis of EDFA Gain Control System based on Two-Level EDFA Model*", the performance analysis was carried out for the proposed DOB based PI control algorithm for EDFA gain control. By introducing DOB to compensate gain fluctuations due to channel add/drops, the transient responses are stabilized much faster than PI controller without DOB. Authors applied a disturbance observer technique to detect channel add/drop signals and theoretically proven the performance of the proposed method.

We would like to thank the authors and reviewers of all of the manuscripts that were submitted. Last but not least, we would like to thank Dr. Niculescu Andrei, Executive Managing Editor of *Studies in Informatics and Control Journal (SIC)* for his efforts in language editing, prompt assistance and excellent organizational skills in helping us meet the deadline, ensure the quality of this special issue and thus provide our association with an invaluable opportunity to show and disseminate the research activities.

We hope that the readers of *Studies in Informatics and Control* journal will find this special issue interesting and useful.

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