

## Editorial

Due to increased interconnection and loading along with deregulation and environmental concerns, electric power systems, around the world, are changing in terms of structure, operation, management and ownership. This makes the electric power system complex, heavily stressed and thereby vulnerable to cascade outages. Electric power utilities are trying to provide intelligent and smart solutions with economical, technical (secure, stable and good power quality) and environmental goals. There are several challenging issues in the smart grid solutions such as, but not limited to, forecasting of load, price, ancillary services; penetration of new and renewable energy sources; bidding strategies of participants; power system planning & control; operating decisions under missing information; increased distributed generations and demand response in the electric market; tuning of controller parameters in varying operating conditions, etc.

The conventional methods in solving the power system design, planning, operation and control problems have been very extensively used for different applications but these methods suffer from several difficulties due to necessities of derivative existence, providing suboptimal solutions, etc. Computational intelligence (CI) is a new and modern tool for solving complex problems which are difficult to be solved by the conventional techniques. Computation intelligent methods can give better solution in several conditions and being widely applied in the electrical engineering applications.

In this special issue, sixteen papers, which are focusing on various areas of emerging power systems such as improving power transfer capability, transformer protection, multi-area economic dispatch, power system security, distribution system planning and reliability, power quality, shipboard power systems, automatic generation control, flexible ac transmission systems, collaborative control, etc., are considered. These papers utilize and address the various computational intelligence techniques such as artificial neural networks, genetic algorithms, particle swarm optimization, evolutionary techniques, ant colony and harmony searches, fuzzy systems, etc. First paper summarizes the various power system problems and potential CI techniques to solve those problems. Key issues and challenges in power quality problems are discussed in detail in one of the papers. These papers will be very useful to the researchers and academicians, but not limited to, in carrying out the research in power systems using computational intelligence.

Being guest editors of the special issue on “*Application of Computational Intelligence in Emerging Power Systems*” for the *International Journal of Engineering, Science and Technology (IJEST)*, we would like to thank all the authors for publishing their papers, all the reviewers for reviewing the papers of this special issue and the Editor, IJEST, for encouragement.

**Prof. S.N. Singh and Prof. K.S. Verma**

Guest Editors,

*Application of Computational Intelligence in Emerging Power Systems*

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