

Institute of Electrical and Electronics Engineers(IEEE) Hyderabad Section
Life Member Affinity Group(LMAG), Hyderabad section
in association with
Joint Chapter of IEEE CIS/GRSS Societies, Hyderabad Section

A Webinar on

ANN-Based Real-Time Voltage Stability Assessment in Power Systems

by

Prof.R.Balasubramanian,Retired Professor IIT,Delhi& Vice Chair, IEEE Hyderabad Section

Abstract:

A new approach to ANN-based real time voltage stability monitoring and reactive power management in a power system has been presented in this work. In this approach a separate ANN has been trained for each of the vulnerable load buses in the system from the voltage stability point of view. The vulnerable load buses of the system are identified by modal analysis of the system reduced Jacobian (of Q-V coupling) matrix. The output obtained from each of these ANN's is the distance to voltage collapse in terms of the MVAR margin available at the specific vulnerable load bus at the current operating point (loading condition) of the system. The novel inputs proposed for these ANN's consist of the complex power contributions of each of the generators and other controllable reactive power sources provided in the system in meeting the load at the particular load bus at the current loading condition and the electrical distances between these sources and the load bus, in addition to the conventionally used inputs of reactive power margins at the sources and the complex power drawn and voltage magnitude at the particular load bus. Special care has been taken in generating a comprehensive set of realistic loading conditions in the system, including generating unit outage conditions and relevant (N-1) network element outage contingency conditions.

Date: 26 Feb, 2021, Friday

Link to join:

Time: 6 pm – 7:30pm
(Indian Standard Time)

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Brief Bio:

Dr. R. Balasubramanian obtained his Ph.D. degree from IIT Kanpur. After serving in B.H.E.L. Projects Engineering Division, New Delhi during 1975-79, he joined IIT Delhi in the Centre for Energy Studies, where he occupied various positions and retired as a Senior Professor in 2012. He served as NTPC Chair Professor (Elect. Engg.) at IIT Delhi for over 10 years.

He has executed successfully some major consultancy/sponsored research projects for organizations such as NTPC (R&D), BHEL, Easun Reyrolles, Siemens, Wartsila, World Bank, MNRE and CBI&P.

He has guided 20 Ph.D. Theses at IIT Delhi and published over 150 research papers in various National and International Journals & Conferences of repute.

He served as the Chair of the IEEE Delhi Section during the years 2000 & 2001. He was the chair of the IEEE Hyderabad PES/IAS/PELS Joint Chapter during 2014-2015 & Chair of LMAG during 2019 & 2020. He is currently the IEEE Hyderabad Section Vice-Chair.