Short Bio of Prof. Jizhong Zhu

Prof. Jizhong Zhu (IEEE Fellow, IET Fellow, CSEE Fellow, AAIA Fellow, Alstom Fellow) received the B.S. degree, M.S. degree and Ph.D. degree in electrical engineering from Chongqing University in 1985, 1987, and Feb. 1990, respectively. Dr. Zhu was a professor in Chongqing University. He won seven provincial and ministerial awards for scientific and technological progress, and was selected as one of four outstanding young scientists working in China by The Royal Society of UK and China Science & Technology Association and awarded Royal Society Fellowship in 1994, as well as awarded the national research prize "Fok Ying-Tung Excellent Young Teacher Medal" in 1996. He worked in a variety of places all over the world, including Chongqing University in China, Brunel University in UK, National University of Singapore, Howard University in USA, and ALSTOM Grid Inc., China Southern Power Grid and South China University of Technology (since 2019).

He is currently a professor and director of ISESOOC center in SCUT and National Distinguished Expert in China. He is Chair of IEEE P2781 and P2783 Standard working groups since 2018, Chair of IEEE PES SBLC Technical Committee (China), member of IEEE SMC Technical Committee on intelligent power and energy systems, and member of IEEE SMC Standard Committee, as well as was Chair of IEEE PES SBLC Loads Subcommittee during 2017-2019.

His research interest is integrated smart energy system optimal operation and control (ISESOOC), as well as power system analysis, smart grid and renewable energy applications. He has published six books as a sole author, and published over 300 papers in the international journals and conferences.

Title:
Application of artificial intelligence methods to wind power forecasting

Abstract:

This presentation discusses the application of artificial intelligence methods to wind power forecasting in power system. It uses a two-layer Gated Recurrent Unit (GRU) to build a wind power time series forecasting model. To accurately predict the sudden change of the time series, we uses differentiable dynamic time warping (DTW) to construct shape and time loss (STL) to improve the loss function of GRU. STL decouples the shape and time of the time series and provides the metrics of the two respectively. The test results on the wind power data of the Global Energy Forecasting Competition 2014 (GEFCom2014) show that compared with the traditional mean squared error (MSE) loss, the STL has a higher prediction accuracy under non-linear and non-stationary time series.