

Energy and Power Group

Weekly Seminar Series

Friday, February 28, 2019, 9:10 a.m. – 10:10 a.m., ETB 1020

A Deep Learning Approach for Spatio-Temporal Impact Analysis of Power Grids Against Wildfires



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Abstract

This talk is of a comprehensive two-stage framework for analyzing the spatio-temporal wildfire impacts on the power grid using a deep learning approach. In the first stage, we develop a spatio-temporal prediction of wildfire ignition and spread using big data based deep neural network in combination with the state of the art wildfire physical model. In the second stage, we present a power system risk assessment where geospatial information system (GIS) data of the power grid topology and the stochastic spatio-temporal wildfire model are combined. The advantages of our framework over current, conservative utility wildfire threat area based analysis is demonstrated by numerical results conducted on an IEEE 24-bus test system mapped to the studied area.

Biography

Amarachi Umunnakwe is a student of the department of Electrical and Computer Engineering at Texas A&M University. She received her undergraduate degree in Engineering from the University of Nigeria, MS from the University of Utah and her Ph.D. research is geared towards the cyber-physical resilience of the power grid.