

# **Analytic Methods to Analyze and Predict Causes of Security Failures in Power Grid**

*Dien D. Phan*

*Kim G. Phan*

*Information Systems Department*

*St. Cloud State University*

*St. Cloud, MN 56301, U.S.A.*

## **Abstract**

Power grid failure is one of the major threats to national security today. Public Utility Companies and security experts are devoting great efforts to prevent power failures by identifying the risks and causes of power failures. With the proliferation of cyber attacks, maintaining security for power grid becomes critical.

The recent attacks of power grids in Ukraine in December 2016 raised questions about what can be done to safeguard the electrical grid from an attack that could leave millions without power for days or weeks, with potentially devastating consequences.

This research attempts to use Analytic techniques to evaluate the risks of power failures and the causes using SAP Predictive Analytics based on simulated data. Using techniques provided by Kale and Jones (2016), most influential causes for power failures can be identified and a decision tree of the causes can be established.