



Student Researcher: David McQuiller II
Faculty Mentor: Dr. Karen Butler-Purry

Electrical Engineering Department
Texas A&M University

Remote Analysis of a Power System using TCP/IP

Abstract

OVERVIEW: With the population around the world overwhelmingly increasing, the supply for and demand of power is reaching new heights. Innovative technology must be made to keep up stress load on the power systems. After the blackouts happening around the world, it is apparent that a new method must be developed to efficiently analyze remote real life power systems. Multi-University Research Initiative (MURI) is attempting to pave the way for this creativity. The goal will lead to new Remote Testing and Measurement devices (RTM), allowing universities within the program to interconnect.

STUDENT PROJECT: As a participant, Texas A&M will derive a resourceful method for remotely analyzing a power system and communicating back and forth with other universities. TAMU has modeled a real-life power system from Drexel University into Matlab Simulink and can study it using Graphical User Interfaces (GUI) incorporated into LabView. LabView is also able to manipulate the system over TCP/IP. This allows for the simulation and study of the stress load on today's power systems. The modeling and simulating must be accurate so that real time studies may be done in the future and applied to the actual physical power systems themselves. Analyzing the data over the internet alleviates having to go to the location itself to monitor its status or fix any problems within the power system. This will significantly contribute to signal conditioning devices; monitoring, controlling, and analyzing electric power systems; and give a new generation of power engineers a higher understanding of measurement and design needs in relation to hardware component analysis, mathematical models, and large-scale power system analysis. Given that large scale power systems are very much

dependent and integrated with other power systems, it is necessary to separate these systems while still communicating precisely over the network. Smaller power systems will serve as the foundation for methodical approaches, which will be applied theoretically and similarly to Three phase Power systems using LabView and Simulink.