Engineering Analysis Task Team (EATT)

Evangelos Farantatos (EPRI) – Co-Lead

EATT Call

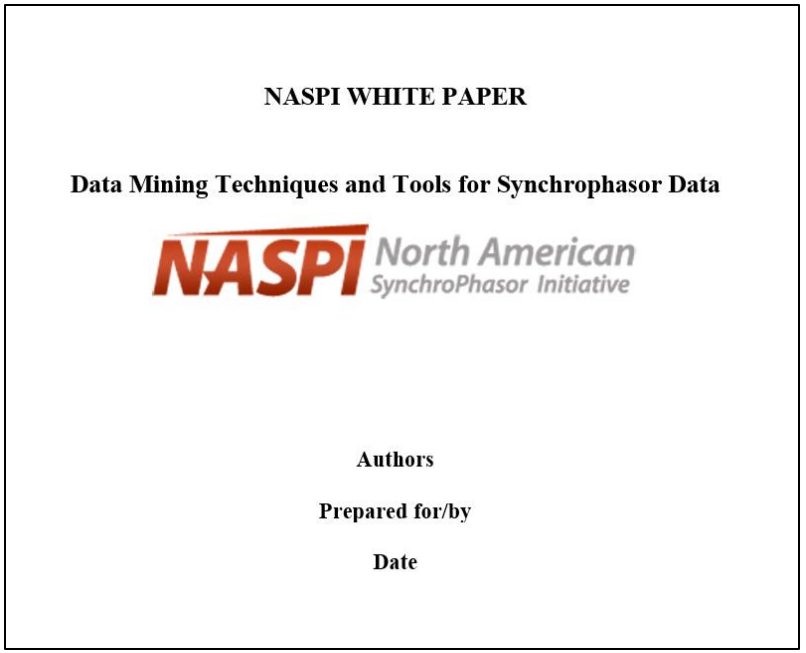
September 4 2018

Agenda

- Update on “Data Mining with Synchrophasor Data” White Paper
- Data Repository for PMU Measurement Based Artificial Intelligence Applications
- Presentation: Slava Maslennikov, “Public Repository of PMU Data for Oscillatory Events” – ISO-NE Experience
- Discussion

EATT Present Activities

- **Data Mining Techniques and Tools for Synchrophasor Data**
  - **NASPI White Paper**
  - **Lead: Brett Amidan (PNNL)**


NASPI WHITE PAPER

Data Mining Techniques and Tools for Synchrophasor Data

NASPI North American SynchroPhasor Initiative

Authors

Prepared for/by

Date

White Paper Focus:

- give a high level overview of data mining
- review how data mining has been used in industry
- present common big data architectures, software languages and tools that facilitate data mining
- provide use cases that show how data mining has been applied in the power systems community
- discuss possible future ways to apply data mining to the power grid and more specifically with synchrophasor data

Data Mining Techniques and Tools for Synchrophasor Data - Outline

1. Introduction
   - Synchrophasor Technology Background Information
   - Data Mining Background
     - Definition
     - Use of Data Mining in Other Industries
   - Big Data Architecture Background
2. Data Mining Techniques
   - Feature Extraction
   - Clustering (Unsupervised Learning)
   - Classification (Supervised Learning)
   - Model-based Approaches
   - Aggregation Strategies
3. Software Tools and Big Data Platforms for Data Mining
   - Data Mining Tools
     - Open Source Languages/Software
     - Commercial Languages/Software
   - Big Data Platforms and Databases
4. Use Cases
   - Data Mining Applications for the Power Grid
   - Data Mining with Synchrophasor Data
5. Conclusions

Contributors:
- PNNL – Bret Amidan
- PNNL – Pavel Etingov
- PingThings – Sean Murphy
- ORNL – Femi Omitaomu
- ATC – Xiangyang Zhou
- CSRA – Tom Rizy
- UTK – Kai Sun
- Columbia University – Daniel Bienstock

Contact us if you are interested to contribute

Goal: Finalize white paper by the October 2018 NASPI meeting

Data Repository for PMU Measurement Based Artificial Intelligence Applications

- Data availability is a challenge for AI applications development, testing and evaluation
- Synthetic data & actual measurement data
- Data confidentiality and associated legal issues is a concern
- Anonymized data
- Different datasets for different applications

Work Plan for EATT to initiate effort on developing a Public Repository of Synchrophasor Event Data