Analytics for a Leading Windmill Power Generator

About Customer: Customer is a Europe based major generator of Power using Wind Energy. They wanted to understand how to ensure consistent functioning of their windmills.

About Hiddime: Hiddime is a DATA ANALYTICS Service in the Cloud. It is an easy to use Investigative Discovery and Exploratory Analytics tool (IDEA tool) for the frontline Business Managers and Domain Specialists, who are not necessarily IT experts. A Hybrid Graph Relational store (or Semantic RDF Store) undergirds the BI Data Warehouse and retrieval system. It enables easy yet exhaustive querying along with integration of data from external sources. Hiddime is a service of Lead Semantics – a Semantic Big Data Analytics company based in Hyderabad, India with offices in Houston, USA

About Franz: Lead Semantics & Franz are joint collaboration Partners. Franz Inc. is an early innovator in Artificial Intelligence (AI) and leading supplier of Semantic Graph Database technology with expert knowledge in developing and deploying complex Big Data analytics solutions. AllegroGraph, Franz's flagship, high-performance, transactional, and scalable Semantic Graph Database, provides the solid storage layer for Enterprise grade NoSQL solutions. AllegroGraph's Activity Recognition capabilities provides a powerful means to aggregate and analyze.

leadsemantics

Machine Language, Big Data and IOT

hiddime
Data Science and Cloud Analytics from leadsemantics

Problem Statement: Customer wanted to ensure that the Windmills run to produce optimum output by discovering patterns That could zero in on anomalous behavior.

- Sample Data: Hiddime was tasked to collect data from Sensors on Windmills. Each sensor would generate about 27,500 Data points every second.
- Case Study: Analysis IOT data from sensors by applying Semantics and machine learning concepts.

Hiddime Approach: Following approach was adopted:

- Data was cleansed
- Datasets created
- Type/Kind of analytics were identified, documented and customer signoff obtained
- Datasets were loaded in to Hiddime
    - Analytics & Dashboards were generated

Inferences:

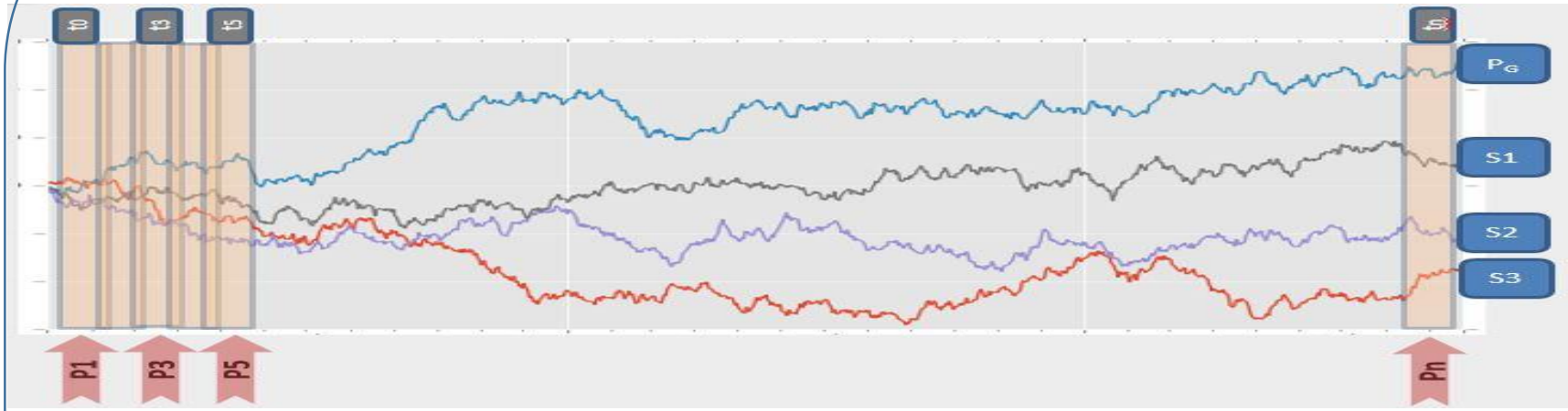
- Effect of different parameters on each other could be determined
- Able to understand effects on Windmill operational status by seemingly independent parameters via Connected Graph
- Able to nail the few cases in which failure was imminent
- Able to recommend optimal working conditions based on Analysis of IOT data

Outcome Summary:

- Windmills showed a standard slow down rate before failure
- External weather conditions had more bearing than thought
- Unrelated parameters like wind speed and sunshine together have a huge impact on the output generated

Graphical Outcomes:

Illustration – ML + Semantics of IOT data from a wind mill, visualized for easy predictions



Visual Analysis of Patterns detected out of the sensor data and visual detection of transition patterns that identify degradation towards failure of the system