ML22/23-12: Implement Anomaly Detection Sample

Information Technology Course

Module Software Engineering

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**Abstract -- HTM (Hierarchical Temporal Memory) is a machine learning algorithm, biologically inspired, both structurally and functionally, by neocortex of a human brain, which uses a hierarchical network of nodes to process time-series data in a distributed way.**

1. **Introduction: There are several examples in industries including finance, IT, security, medicine, and energy where anomalies provide important information in urgent circumstances. A large portion of the world's data is streaming, time-series data. However, identifying irregularities in streaming data is challenging, necessitating real-time data processing rather than batch processing, learning, and prediction-making by detectors. A machine learning method, the Hierarchical Temporal Memory (HTM) algorithm is based on the core concepts of the Thousand Brains Theory. Its layout and are fashioned after the neocortex, a large, complex area of the human brain.**
2. **Methods:**

**This point will illustrate the approach used to implement and evaluate the anomaly detection system inspired from the Hierarchical Temporal Model(HTM). It is designed to ensure clarity and efficiency during maintaining a strong foundation in both data science principles and HTM’s biological inspiration. It’s essential to find the best fit HTM model, after tuning its parameters and finding the best HTM model for the project.**

**Data Preparation**

**Data preparation is one of the most tricky step in the project as it ensures the model is trained and tested wit appropripate, well-structed data. In the project numeric values are stored in the .csv file, representing time-series data. This explicit real-workd scenarios, such as network load percentages with normal data and anomalies strategically included in separate datasets.**

1. **Result:**
2. **Discussions:**
3. **References**