WALMART: PREDICTIVE PLANNING, ORDERING AND MONITORING

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PROBLEM

- Walmart associates manually plan what supplies they need to order for the store weekly
- Manually ordering raises opportunities for mistakes and reduces efficiency
- Associates could be rushed and submit inaccurate orders
- Stores could be missing light bulbs in sections of the store
  - Associates can be without handheld scanners

OBJECTIVE

- The objective of this project is to help associates order supplies more efficiently by forecasting what items need to be ordered and the quantity of them
- It is based on trends and patterns, historical purchases and logistics along with holidays and seasonal purchasing
- Implementing a machine learning model in Python based on historical Walmart retail location business supply order purchase data

KEY CONCEPTS

- Front-end Development
  - Allows the user to interact with the website
  - HTML & JavaScript
- Back-end Development
  - Focuses on how our website functions. It will lay the foundational code that will enable the website to process the actions of the user on the front-end and deliver the correct information in return.
- Machine Learning
  - Machine learning is a method of data analysis that automates analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention.

RELATED WORK

- Using RFID tags and monitors to detect in and out of stock items
  - Will differ for our implementation because we will not have stock numbers
- Artificial intelligence
  - Demand Prediction for Inventory Management method
- Recommendation engine
  - Will be beneficial in implementation to decrease human error and increase order efficiency
- Reducing forecasting errors
  - Important in machine learning because it can predict demand in the future

REQUIREMENTS/USE CASES/DESIGN GOALS

- Requirements
  - Minimalist website frontend that accepts user login credentials including store number and employee ID
  - Relational database containing historical supply order data provided by Walmart
  - Machine learning model we will develop that uses the provided data to create a predictive algorithm
- Use Cases
  - The primary use case of this project is for restocking and reordering Walmart store locations with business supplies that employees regularly use
- Design Goals
  - Past store supply order data will drive a machine learning model that yields a predictive algorithm that will be used for supply ordering and restocking

TASKS – AN OVERVIEW

- Reasearch machine learning – what makes a model good and what to avoid
- Design and build the Database, Webpage, and ML model
- Testing - Refine, refine, refine
  - Tweaks will need to be made as new data is generated
  - Are there relational items?
- Documentation
  - Final report, PHP, JavaScript, HTML, Python, and SQL code

KEY PERSONNEL

- Dipika Mohapatra – Our industry point of contact. She works for Walmart as a software developer.

- Aneshkumar Tadi and Prasoon Anand – Walmart technical architect and Walmart tech lead in Bangalore respectively. They will assist our project by providing technical support and the data we will use to populate our database.