NEW PRODUCT FORECASTING

End_Sem_Project _Plan

12/15	○	**Identify an Idea**
01/20	○	**Brainstorm ideas** Look for references outside and inside the org
01/28	○	**Narrow down ideas** Considering all the refernces, Choose the final path to proceed
02/10	○	**Build a prototype - Get started with the Coding Part**
03/15	○	**Test your Code for any bug or misinterpretation**
03/20	○	**Launch and Present**
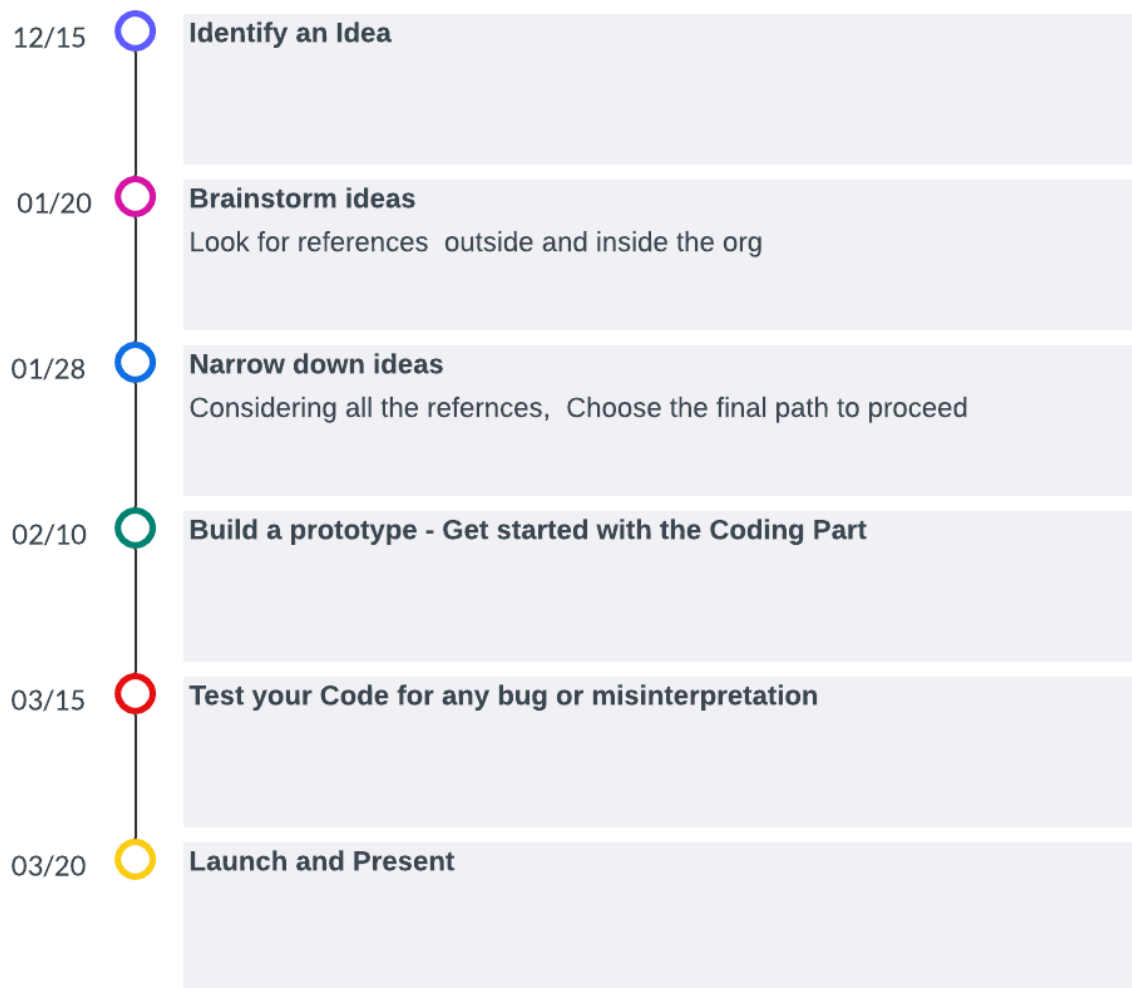
I. Introduction:

Objective

Sales forecasting for new items in the absence of past data is still quite difficult. This study investigates a novel method that combines supervised learning to forecast sales with unsupervised learning to find comparable current products. We hope to overcome the data scarcity hurdle and perhaps transform new product launch strategies by generating precise forecasts for new products by assessing similarities based on important criteria and utilizing retailer-specific models.

Challenges

Since new items don't have the historical data that supports standard methodologies, predicting their sales is a risky endeavor. This project uses machine learning to address this problem: 1) utilizing unsupervised learning to identify similar items that already exist; 2) using supervised learning to forecast sales for those similar products; and 3) using these insights to forecast sales of the new product. Our goal is to break through the data barrier and enable precise forecasting for the introduction of new products.

Proposed Solution

By combining the advantages of two learning strategies, my technique addresses the problem of new product forecasting. Initially, unsupervised learning examines the distinctive qualities of current items to determine which ones are most comparable to our new offering. Consider it akin to locating similar people! Subsequently, supervised learning takes over, utilizing past sales information from comparable products to forecast their future outcomes. Lastly, even without a sales history of our own, we use these forecasts, weighted by how similar they are, to generate a data-driven forecast for our new product. By combining these two

methodologies, it should be possible to obtain precise and informative sales forecasts for new items, potentially altering launch tactics.

II. Literature Review: Enlisting all the references made for project

Because there is a dearth of previous sales data, predicting for new products is particularly difficult. Current studies investigate creative strategies to get above this obstacle. Using methods such as nearest neighbor and clustering, similarity-based forecasting finds comparable current items and uses sales information from them to forecast future products.

Unsupervised Learning approach references:

New Product Forecasting: A Survey of Analogical Reasoning and Collaborative Filtering Methods" by Keane and Runkler (2005)
https://www.hindawi.com/journals/aai/2009/421425/

In order to predict demand for comparable new products, market basket research finds product combinations that are often purchased

Forecasting New Product Sales Using Association Rules" by Yeung et al. (2007)

https://www.researchgate.net/publication/335984222_SALES_FORECASTING_OF_PHARMACEUTICAL_PRODUCTS_USING_ASSOCIATION_RULE_MINING_ARM_METHOD

A neural approach to product demand forecasting

https://www.researchgate.net/publication/236858266_A_neural_approach_to_product_demand_forecasting

Supervised Learning approache references:

With little data, transfer learning adjusts models developed on similar items to the new product

Artificial Intelligence in Supply Chain Management: Investigation of Transfer Learning to Improve Demand Forecasting of Intermittent Time Series with Deep Learning

https://www.researchgate.net/publication/357739523_Artificial_Intelligence_in_Supply_Chain_Management_Investigation_of_Transfer_Learning_to_Improve_Demand_Forecasting_of_Intermittent_Time_Series_with_Deep_Learning

Domain Adaptation for Time Series Forecasting via Attention Sharing

https://arxiv.org/pdf/2102.06828.pdf

To help with predicting, textual analysis takes sentiment and insights from reviews and product descriptions
https://www.sciencedirect.com/science/article/abs/pii/S0360835223004187

Hybrid strategies blend references:

Combining Supervised and Unsupervised Learning: To take use of each's advantages, this strategy combines transfer learning with similarity-based learning techniques. The supervised stage uses their sales history and extra information about the new product for a more thorough forecast, while the unsupervised step finds similar goods.

A hybrid demand forecasting model for greater forecasting accuracy: the case of the pharmaceutical industry

https://www.tandfonline.com/doi/full/10.1080/16258312.2021.1967081

An Improved Demand Forecasting Model Using Deep Learning Approach and Proposed Decision Integration Strategy for Supply Chain

https://www.hindawi.com/journals/complexity/2019/9067367/

High Level Architecture

https://lucid.app/lucidchart/invitations/accept/inv_18f980e2-08fa-4a8a-a9aa-a67f243f749c

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
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I SEMESTER 23-24

DSE CL ZG628T **DISSERTATION**

(EC-2 Mid-Semester Progress Evaluation Sheet)

Scheduled Month :

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PROJECT TITLE : New Product Forecasting

EVALUATION DETAILS

EC No.	Component	Weightage	Comments (Technical Quality, Originality, Approach, Progress, Business value)	Marks Awarded
1	Dissertation Outline	10%	Outline seems precise, detailed problem view is put	9
2.	Mid-Sem Progress Seminar	10%	Candidate has been able to make me understand the objective, challanges faced and the solutions proposed	8
	Viva	5%	Candidate has enlisted and gone through the technical literature references and cited them in Outline	3
	Work Progress	15%	Candidate is yet to start with actual Code part	7

	Organizational Mentor	
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Date	14/02/2024	

Note: *Supervisor should announce the Mid-Semester grade to the student directly and the completed evaluation form and the mid semester report to be uploaded in the viva portal on or before the due date.*