INITIAL PLAN: “DATA-DRIVEN FASHION TREND FORECASTER”:

By Moriah Tsekiri 22061888
Supervisor: Federico Liberatore

Project Description

Fashion trends are changing faster as the years go by. Therefore, timing and accuracy in trends is crucial in fashion industry. This is already such a complex space that everyone whether intentionally or not, participates in everyday though the individual's style and the constant consumption of clothing. Trend forecasting not only effects consumers but also sellers: there is a recognised pipeline for trends started by the trend-setters, who are classic fashion houses like Chanel and Gucci to rising fashion-houses like Loewe. They influence trend followers who are mainstream, fast-fashion brands like Zara and PrettyLittleThing which rely on selling trendy wear as their significant source of income. A fashion trend forecaster could help designers better predict consumer preferences and demand through deliberate trend adoption using data-driven predictions and timelines. This will enable more precise production planning and help slow down the production wastage from failed predictions and be time efficient.

Current forecasting methods are time-consuming relying on intuition and manual trend analysis. This project seeks to develop a dashboard that uses AI-powered data analysis to track and forecast fashion trends in real time. The research surrounding this has used the Neural-Network models Knowledge Enhanced Recurrent Network model (KERN) and Complicated Temporal Dependencies (GNNctd). (Chen, 2024 and Ma, 2020) I will investigate the **accuracy**, **efficiency** and **sustainability** for forecasting trends using an **A.I. model**. This project will explore the **state of the art of Fashion AI, how it is represented in AI and, most importantly, what is the state of forecasting in AI?**

The tool has to identity a trend which can be difficult to define in fashion as it can be anything, from shape, colour, fabric type or a specific item of clothing. We must first define what a trend will be for this prototype. A fashion trend can be a recurring pattern or style element that upholds to the following criteria over a period: Sustained **rise in mentions**, seen **in multiple sources and its adoption speed** (e.g. runway, fast fashion and social media datasets) and **longevity vs fad (longevity suggests macro-trend whilst fad suggests micro).**

The focus would be training the datasets; they will be text-based. The methodology involved would be to **use natural language processing (NLP)** to extract fashion related terms, and **LSTM time series forecasting to predict which trends will rise and fade**. I intend to use a provided dataset from Kaggle which spans from years 2013-2023. The implemented A.I model should learn to recognize fashion attributes in a systematic way.

This is a sufficient challenge for my final project as fashion trend forecasting is something that does not have much research on but the few research papers that have are publicly available are thorough and can adequately support my project and most problems I may run into, like training the dataset.

This project combines emerging technologies like AI machine learning and topics in computer science, we have touched on in computer science in previous years, like web development. It allows me to demonstrate my growth from the modules learnt and challenges me to learn more about parts of the course that was not touched on much (deep learning, machine learning, AI). Therefore, it can be done in time frame we have. And this will aid a completely different industry to technology – fashion industry – which reflects how technology has made significant strides in the world, consistently crossing over into different sectors like finance law etc.

Aims and Objectives

This project aims to accurately predict emerging fashion trends by analysing past and present fashion data, which will be presented on a dashboard.

<u>Objectives:</u>

1. process fashion related data from diverse sources
    - Extract fashion elements (e.g., patterns, colours, silhouettes) from collected data
    - Risk: legislation issue with social media platforms' APIs like Instagram and TikTok. Projects do not have funding so cannot purchase licencing for this.
    - Mitigation: I will use public datasets and comply with GDPR & CCPA privacy regulations. Only use official APIs of platforms that that is easier to collect data is needed (e.g. Mastodon). Additionally, diversify these data sources to also limit risk of biased data
2. Design and develop an interactive fashion trend dashboard. It must be user-friendly and focus more on visuals like images and graphs, since users would most likely be designers and creatives.
    - Risk: poor user experience due to complex User Interface
    - Mitigation: conduct necessary tests mirroring use case scenarios

Feasibility

Obtaining dataset could be an issue: doing this manually over two decades worth of runway magazine and social media images and text is very tedious, and their premade datasets are scarce. However, when researching other trend forecasters there are a few available datasets to use, this would speed up the process of the project significantly. And if slightly out of data, I could scrape recent texts and images from the last few years. I have seen potential code for scraping data from Vogue's website on GitHub, that looks promising.

Licensing and intellectual property maybe an issue for social media platforms such as Instagram, as there are strict legislations on scrapping data from Instagram. "Unauthorised scraping involves automation to collect information in violation of our Terms of Service." (Instagram, 2021)

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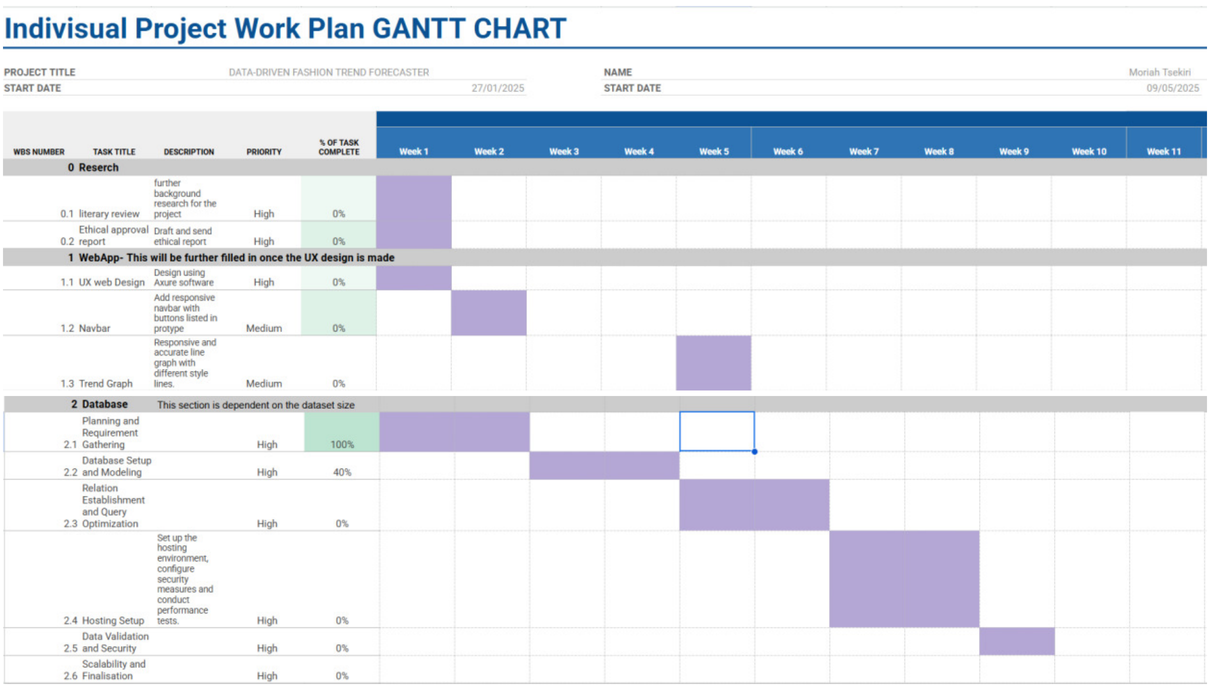
Therefore, another issue may be getting ethical approval. If this is needed this would have to be the first thing I do in the project. The earlier I do it the better, as I will need to wait for the Cardiff university committee of ethics to approve my request. Nevertheless, this is most definitely feasible if done on time (yet still ethical approval may not be required if I am scraping public information).

Work plan (1 Page)



Indivisual Project Work Plan GANTT CHART

PROJECT TITLE	DATA-DRIVEN FASHION TREND FORECASTER	NAME	Moriah Tsekiri
START DATE	27/01/2025	START DATE	09/05/2025

WBS NUMBER	TASK TITLE	DESCRIPTION	PRIORITY	% OF TASK COMPLETE	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
0	**Reserch**														
0.1	literary review	further background research for the project	High	0%											
0.2	Ethical approval report	Draft and send ethical report	High	0%											
1	**WebApp- This will be further filled in once the UX design is made**														
1.1	UX web Design	Design using Axure software	High	0%											
1.2	Navbar	Add responsive navbar with buttons listed in protype	Medium	0%											
1.3	Trend Graph	Responsive and accurate line graph with different style lines.	Medium	0%											
2	**Database**	This section is dependent on the dataset size													
2.1	Planning and Requirement Gathering		High	100%											
2.2	Database Setup and Modeling		High	40%											
2.3	Relation Establishment and Query Optimization		High	0%											
2.4	Hosting Setup	Set up the hosting environment, configure security measures and conduct performance tests.	High	0%											
2.5	Data Validation and Security		High	0%											
2.6	Scalability and Finalisation		High	0%											

3	**dataset: Vogue/ Instagram/ runway**			
3.1	Setup API key		medium	0%
3.2	Database Intergration		medium	0%
3.3	Begin Collecting Data	This is in case the dataset provided already is lacking	medium	0%
3.4	Improve Data Collection	following on with begin data collecting	Medium	0%
			0	0%
5	**Data Processing**			
5.1	Sytem to determine if data there is similarities in images and word count	Create a system so that the posts collected can be reviwed to confirm whether there is a trend starting	High	0%
5.2	Improve detection system	Determine using time serise forecsting if it is micro or macro trend	Medium	0%
5.3	Required data analysis		High	0%
6	**AI model**			
6.1	Develop LSTM model	Train LSTM model to detect fashion elements	High	0%
6.1.2	improve CNN model	fine-tune by implementing more data, testing and improving any problems	High	
6.2	Develop NLP trend analysis	Train NLP model for trend detection from text	High	0%
6.2.1				
6.3	Mini testing	Test the AI model with new datasets and integrat into dashboard	Medium	
7	**Testing**			
7.1	Testing		Medium	0%
7.2	Apply Fixes		0	0%

This work plan shows roughly the stages of each week up to week 12. (Week 12 Is not in the images above however will be reserved for the report. As well as week 11.)

References

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