

End-to-End Web Development in a Startup Environment

The Role of Artificial Intelligence in Consumer Choices in the Fashion Industry

A Thesis Prospectus

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By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

Technical Project

My technical project is based on my experience as a Software Engineering Intern at the insurance technology startup QuoteWell over the summer of 2022. Throughout this internship, my primary development responsibility was to design and implement an end to end feature meant to enable internal tracking of customer submissions on the product website. This project lasted over a month and was a core aspect of the company's product and workflow.

STS Project

My STS project will study the effects of Artificial Intelligence (AI) algorithms on consumer desires, through the lens of the fashion industry. This study will revolve around the following research question: How does the fashion industry leverage AI in advertising algorithms to drive consumer choices? This question is significant because AI represents the cutting edge of software innovation, and has only become more and more prolific and commonly used (Haan, 2023). Therefore, understanding its potential impacts is essential to mitigating any potential harmful effects, and bolstering any positive ones.

Furthermore, the ramifications of AI, especially in the fashion industry, carry significant implications for the global environment. It is a well established fact that the fashion industry negatively impacts the health of the environment (Niinimäki et al., 2020). The negative effects have the potential to continue to worsen as, enabled by AI, the fashion industry grows. Therefore, it is essential to understand how the use of AI might influence consumers into supporting the fashion industry, influencing the industry's impacts on our world.

Roadmap

This prospectus will first detail my technical project. Next, it will outline my STS project. In this STS project section, I will further discuss my research question and its importance, the social groups relevant to my research, the methodologies and frameworks I employ to organize and develop my arguments, my timeline for research and the project, and finally four key texts that are foundational to my research.

Technical Project

Over the summer of 2022, I served as a software engineering intern for the company QuoteWell (at the time named Capacity Post). This company is an insurance technology startup, who's goal at the time was to enable insurance agents to more efficiently bind insurance for their clients, small to medium businesses. Traditionally, the insurance agent would need to fill out similar forms multiple times, once for each potential insurance carrier. QuoteWell's product was a website where the insurance agent fills out and submits a form with information about their client's business, then QuoteWell finds a suitable insurance provider based on the information, cutting down significantly the amount of submissions the agent needed to make.

Once the user made the submission, QuoteWell needed to use it to find an insurance carrier, then notify the user once the submission was processed. My project throughout the internship was to design and implement the system that would enable this workflow. The process begins when the user clicks "submit" on their form. Using TypeScript, once the button is clicked, a query to the company's PostgreSQL server is made to retrieve information about the submission. Then, a request is made to the Airtable API to create a new record for the submission. Airtable is similar to a combination of excel and a database server. The company

team is able to view the new record and alter it, including updating the status of the submission from “Not Started” to “Complete.” Additionally, using a no-code tool called Zapier, a Slack notification is sent out when a new submission is created in the Airtable database. Once the submission status is updated to “Complete” in the Airtable database, Zapier is again used to make a request to a custom NestJS API. This API updates the React state in the corresponding user’s dashboard, the submission status from “in-progress” to “complete.”

As an essential component to providing product services to the customer, this project was impactful to QuoteWell’s business operations, and was used by the company until their goals and product vision ultimately changed.

STS Project

Research Question

Throughout my research, I will be examining the technology of Artificial Intelligence (AI). AI algorithms, defined by the European Parliament, are “systems that display intelligent behaviour by analysing their environment and taking action – with some degree of autonomy – to achieve specific goals” (Boucher, 2020). With its increasing mainstream appeal in recent years and rapid growth and development, AI will soon be integrated into almost every aspect of our lives (Haan, 2023). One specific area that I am interested in is the impacts of AI on the environment, and particularly the increased use in the fashion industry--a sector notorious for its high capacity of negative impacts on the environment.

AI may be utilized in numerous ways within the fashion industry, but a very effective use is with AI powered advertising. This leads to my overarching research question: How does the fashion industry leverage AI in advertising algorithms to drive consumer choices?

This is an important question because as AI continues to proliferate in various industries, it is essential to proactively assess and address its potential consequences. By investigating how AI shapes consumer desires in the fashion industry, we can gain insights that guide the responsible and sustainable integration of AI into this sector and beyond.

The fashion industry, known for its fast-paced trends and substantial resource consumption (Sull & Turconi, 2008), stands as a significant contributor to environmental degradation. AI's influence on consumer choices within this industry could either exacerbate or mitigate its environmental footprint. Therefore, a thorough examination of AI's role in shaping consumer desires becomes paramount for understanding how we can harness this technology to steer consumers toward more sustainable choices.

Social Groups

The largest and most relevant social group that I will be investigating is consumers. I define this group as those who actively engage in purchasing clothing and have the ability to choose what they buy. This wouldn't include people who don't have options in regards to the clothes they purchase because of financial constraints or other factors. This group is very important because they will most be impacted by AI use, as they are the targets of the fashion industry. They will also be most impacted by potential environmental effects of AI use.

Second is fashion industry professionals, including designers, advertisers, and final decision makers. They are the ones that determine how AI will be used. Designers shape fashion trends that AI might affect. Understanding their perspectives will help reveal the impact of AI on the consumer. I will not be investigating those that actually make the clothes, as that is a substantial topic in and of itself.

Methods and Frameworks

I will utilize the Actor Network Theory (ANT) framework throughout my research. This framework focuses on the actors, which are both human and non-human, and the networks between them in order to understand how they affect one another. ANT suggests that all actors are equally important (Sismondo, 2010), so we can fully understand how each actor contributes without potentially undervaluing some.

This framework is appropriate for my research because I will be studying how AI developers affect the fashion industry and how the fashion industry affects consumers. Treating each of these actors as equally important will ensure I do not undervalue any one group's contribution to the cycle, human or non-human. ANT will help me understand fully the effects of AI on the fashion industry.

Timeline

First, I need to fully define the terms I will be using. These include “consumerism”, “overconsumption”, “fast fashion”, “artificial intelligence”, and more. In order to do so, I will need to research these words much more thoroughly. Then, I will get into the main research. I will look into how companies generally use AI within their businesses to get a better basic understanding of the uses of AI. Next, I will research how fashion companies specifically use AI. Then, I need to fully understand how the consumer and the fashion industry contributes to fast fashion. This will help me understand how AI can affect fast fashion. Next I will study the environmental impacts of fast fashion, so I can understand how AI might contribute to these impacts. Lastly, I will compile my research and write the paper.

Key Texts

The first key text is the book “An Introduction to Science and Technology Studies” (Sismondo, 2010). This work introduces the Actor Network Theory (ANT), which will guide my research structure and help to frame results to draw conclusions. I will use this book to understand the ANT framework and develop an actor network.

Secondly, the article “The Environmental Price of Fast Fashion” (Niinimaki et. al., 2020) details the effects of the fast fashion industry and phenomenon on the global environment. This texts helps me understand the extent of and specific details behind fast fashion’s environmental impact so that I can better understand the impacts of AI on the environment.

Third, how AI is used in the fashion industry specifically. The book “Artificial Intelligence for Fashion” (Luce, 2018) will be essential in my research through helping me understand how the fashion industry utilizes AI in its business practices. This will help me understand how AI could potentially impact fast fashion.

Lastly, the book “Artificial Unintelligence: How Computers Misunderstand the World” (Broussard, 2018) examines how technology and often AI is used as a solution to problems that don’t require it, often resulting in poorly designed and implemented systems that are not beneficial. This book will help me analyze the effects of AI in fast fashion, and whether or not there are positives and negatives.

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