

Project Proposal 2013015

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Submission date: 20-Oct-2022 01:05PM (UTC+0100)

Submission ID: 187128852

File name: 24756_Leon_Mathias_Project_Proposal_2013015_443262_44021930.docx (174.9K)

Word count: 2738

Character count: 14610

Design and produce a usable system to encourage customers of fashion retailers to shop in-store by providing fashion recommendations.

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1. Introduction

As technology becomes more advanced and purchasing items of clothing has become easier than ever due to the rise of online shopping, the reasons for visiting clothing stores in person decrease. As people have become used to online shopping due to clothing stores being closed due to covid-19. In-store technology already exists in some clothing shops have already implemented technology in-store such as self-checkout, virtual try on and comparison technology. Allowing customers to interact with in-store technology will give a reason to visit in-store rather than online in order for them to get more of an experience while shopping.

While some higher end clothing stores have the option of a personal shopper or stylist these can be seen as only for the rich and famous. Not many people can afford to pay for these services and the clothing they provide. Therefore, this project will allow for customers who want clothing recommendations to do this quick and easily in store without the need to pay or book a stylist.

Therefore, this project aims to research and develop a suitable technology that will be useable in clothing stores to provide customers with recommendations on what clothing items will match other items they already like. Also allowing customers to rate the recommendations which will help future developments use AI to provide recommendations.

2. Background to the Proposed Research

Due to the rise on online shopping the amount of shopping trips to physical stores has dropped and is likely to continue to drop [1]. Research found that the most popular benefits to in-store shopping is physical touch of products and being able to consult staff [2]. This shows that many customers like help while shopping. While customers like getting help from staff many find that clothing stores staff has a high turnover which leads to a lack of knowledge on products or misleading information [3]. Having a system in-store which customers can use to get recommendations of what clothing items go well together while shopping will help improve the need for assistance.

It is important while creating a system that will be used by customers for that system to satisfy the customer while they use it as customers experiences plays a role in whether they buy from the store[4]. Because customers have become used to many different features through online shopping, in comparison there is a lack of features in a physical store [5]. Therefore, implementing more technology in-store will give a reason for customers to shop in-store.

There are already retailers that are implementing smart technologies in order to attempt to compete with online shopping [6]. In many fashion stores there are technologies such as digital signage which can show product information and the latest fashion styles [7]. There are also many different interactive in-store technologies such as self-checkout, virtual try on, size prediction and many more [8]. There are also apps that can give style recommendations [9] but they do not encourage customers to shop in-store.



Figure 1: Zara Self-checkout[10]

H&M use their mobile app to help customers receive information on their products and how to style them, but in order to use the features you must first download the app and become a member, not everyone is going to be able or want to do that.

Nike have created a “digital retail experience” in their store in Berlin, this store includes many customer interactive products. Such as the ability to scan football boots and see the information of them and compare with other boots [11].



Figure 2: Nike Boot comparison[11]

While the technology must be useful, it must also be fun for the customer to use in order to create a memorable experience. This then will give the customer a reason to visit the store. The quality of the users experience will impact the store and how the customer views the store. Which has been a problem for many virtual fitting rooms [12]. Therefore, the system should be able to be easy to use, a fun experience and at the same time be useful and be beneficial to the user.

3. Aims & Objectives

The aim of this project is to design and produce a usable system to encourage customers of fashion retailers to shop in-store by providing fashion recommendations.

Objectives:

1. Explore the literature of in-store systems and devices available to customers in the fashion industry.

2. Research and investigate suitable technology to produce a product and allow customers to use the product.
3. Design and develop system allow customers in-store to scan items and receive recommendations for different items of clothing.
4. Test the product with relevant users and analyse the results to arrive at a conclusion.

The expected outcome from this project is to create a product that will encourage customers of fashion shops to visit in-store. This will be done by creating a system that customers will be able to use in store to get recommendations on clothing items they like.

The system will allow customers to scan an item of clothing and then will be able to see what other items of clothing will match the chosen item. This will be done by reading the barcode they have scanned and then displaying the item on the screen along with other items that match from the database.

The customers will also have the option to rate the recommendations given, the ratings each set gets will influence the position they are shown in the future. This rating system would be the first step in a prediction system using AI in future development of the project.

4. Project Design

4.1 Outline of Project Process

The first steps of the project are to review what research has already been done and what systems are already in place to encourage in-store visits. Research into suitable technology will also be done such as what technology is best in order to allow the user to scan their items.

The system will then be designed and built by using the research conducted. The system will then be tested, and feedback will be given in order to find out what can be improved and what features were liked by the users.

4.2 Data Collection

In order to collect data that is credible multiple methods will be used during this project.

In regard to secondary research a literature review is an important data collection method because it is crucial to see what research has already preformed and what results were found. The data gathered from the literature review will help decide what features should be implemented, how the system should look and what technology is suitable to create the system. It is important that all the literature is up to date and relevant as this will help with ensuring the reliability of the research. Also ensuring the literature is from credible sources such as academic journals.

Software development will be used as the system must be designed and built to ensure the system is created as effectively as possible by finding the best way to design and implement the product.

User testing will be used in order to observe how users use the system as well as to gain feedback for any recommendations on how the product could be improved. By observing how the user interacts with the product will give results that help decide if the system is easy to use and where improvements should be made. A more unstructured observation will take place to allow the user to use the system as they would in a store.

A questionnaire given to the participants of the user testing will be key for gaining feedback as this will help improve the system by understanding the opinion of the participants, allowing for changing the design or adding any features. The questionnaire will contain closed quantitative questions as

well as open ended questions. To ensure reliability in regard to the questionnaire, the questions asked to each participant will be the same and each question will be worded carefully to avoid confusion.

By using multiple methods of data collection this will strengthen the validity of the research as it helps check that the data from the primary research produce similar results found in the literature review [13].

Achieving a high level of generalisability will be difficult because the product is aimed at a large variety of people having a large sample from all different ages, gender and even fashion interests will be difficult.

4.3 Data Evaluation

In order to effectively find the requirements of the product, the literature review will help provide the data needed in order to begin developing the product. This will also help decide on the initial features the product will contain.

In order to evaluate the data gained from observing the user testing, the patterns of how the users use the product will be evaluated. The frequency of what the user does with the features of the system. Noting the time each user takes to use the product will also be evaluated in order to see if there is a more efficient way of using the system.

In regard to the questionnaire, the data will be able to be evaluated in two different ways by evaluating the quantitative answers to the closed questions as well as finding the patterns in the open-ended questions asked.

4.4 Risks & Limitations

One of the main risks is the time. Ensuring the project gets completed on time is crucial because there is a time limit on the project. Another risk is not having access to the resources when they are required. In order to try and stop any of this happening a schedule will be made to ensure the project can be completed in time and all the resources will be available when needed. As well as being a risk time is also a limitation because with more time a more complex/ bigger project could be done.

Another risk is the possibility of data getting lost or destroyed. This could have huge consequences depending on what is lost and when. In order to lower the chance of this backups of all work completed will be made.

4.5 Ethical Issues

While conducting the user tests and questionnaires it is important to treat every person with respect and ensure that the participants know what the information they provide will be used for. Each participant will give consent before participating in any tests. Ensuring their personal data is safe is key, this will be done by only taking what data is necessary for the project, no participant will be named in the project report.

5. Resources & Planning

5.1 Resources Required

This project will require the following resources.

5.1.1 Hardware Resources

- A scanner/reader will be required to allow customers to scan their clothing item.
- Raspberry Pi 4 Model B in order to run the program. According to RaspberryPi.com [14] the following will be needed in order to use the device.
 - A 15W USB-C power supply to power the Raspberry Pi.
 - Micro SD card with Raspberry Pi OS installed.
 - A USB keyboard and mouse to use the Raspberry Pi.
 - HDMI cable to connect the Raspberry Pi to a monitor.

5.1.2 Software Resources

- Visual Studio 2019 IDE as the code editor.
- C# and ASP.Net core will be used to create the app.
- Html and CSS will be used to design the page.
- SQL will be used along with MySQL in order to store and manage the database.
- Microsoft Word will be used to write the report.
- Tomsplanner will be used to create a gantt chart to schedule the work.
- Microsoft OneNote in order to keep notes.

5.1.3 Other Resources

- Clothing items with tags to fill the database.
- Project supervisor will be required throughout the project to help with any problems that occur.
- Participants will be required for user testing and answering the questionnaire.
- Access to journals and books in order to complete the literature review

5.2 Planning Chart

Table 1: Project schedule

Task	Date	Resource
Investigate current technologies and research	3/10/2022 – 6/10/2022	
Create one aim for the project	10/10/2022	
Define the objectives of the project	10/10/2022	
Decide what hardware is required	11/10/2022	
Decide what software is required	11/10/2022	
Decide on data collection methods	12/10/2022 – 13/10/2022	
Find appropriate ways to analyse the data	14/10/2022	
Schedule project	17/10/2022	
How does the user interact with the current systems	24/10/2022 – 26/10/2022	
What technologies do they use	26/10/2022 – 28/10/2022	
What do they provide to the customer	28/10/2022	
Expand knowledge on c#	31/10/2022 -	
Learn the features of ASP.Net	31/10/2022 – 4/10/2022	
Investigate input systems	7/10/2022 – 9/10/2022	
Decide which input system will be used	9/10/2022	Scanner and reader
Create a database	11/10/2022	
Develop the system	21/11/2022 – 01/03/2023	
Design the display page	21/11/2022 – 28/11/2022	
Decide on the position of the data on the screen	25/11/2022	
Investigate how to display the recommended items	28/11/2022	
Decide how the rating will affect the recommendations	30/11/2022 – 5/12/2022	
Research how to use raspberry PI technology	6/12/2022 – 9/12/2022	
Plan for interim Viva	03/01/2023 – 16/01/2023	
Set up the Raspberry PI	17/01/2023	Raspberry PI
Transfer the system over to the Raspberry PI	18/01/2023 – 25/01/2023	Raspberry PI
Conduct user testing	26/01/2022 – 01/03/2023	Participants
Give participants a questionnaire	26/01/2022 – 01/03/2023	Participants
Evaluate the responses from the participants	02/03/2023 – 08/03/2023	
Create future recommendations for the product	15/03/2023 - 27/03/2023	
Complete final report	28/03/2023 – 26/04/2023	

6. Reference List

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GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

73/100

Instructor

Intro / A&O (400 words)		
Project title; Identification of a specific problem to be investigated; Well-defined aims and SMART objectives; Explaining why this project is worth doing; Discussion of what the project needs to do in order to be a success; Description any deliverables that will be produced at the end of the project Problem is clearly defined and an interesting business problem. The aim and objectives are perhaps a little detailed for this level but they describe the necessary actions well.	20	14
Background to the Project / Literature Review (400 words)		
Description of how the work to be done by in the project relates to the work identified in the literature review; Discussion of any ethical issues raised by the project Identifying what has already been done within the field; Topic familiarity; Brief literature review using appropriate sources – 6-8 journal papers and book chapters rather than just websites; Selection of relevant models & concepts Good business justification for why shops should go for this sort of system. Doesn't this only allow for mainstream fashion? What about people who don't want to follow the crowd? More referenced images of the smart technologies mentioned would be good.	20	15

Highlighting the fact that the experience must be fun is a good point – user experience is going to be a big part of this project.		
Project Design (500 words)		
Clear statement of which development methods are to be used and why they are appropriate; Clear statement of which tools are to be used and why they are appropriate; Clear description of how data collected will be analysed A bit more detail on the project process would be useful. The data collection methods are sensible given the aim and objectives of the project. Good coverage of reliability, validity and generalisability. The data will be explored rather than just tallied, which is good. Risks and ethical issues have been approached sensibly.	30	22
Resources / Planning (200 words)		
List of any deliverables; Clear diagram showing both timing and resource use; Completed ethics form; Limited and relevant appendices Hardware, software, and other resources considered in a good level of detail. Planning table is good, and easier to read than a Gantt chart. The set of tasks given is good for the development phase but needs to include the literature review.	15	10
Document Presentation		
Correct spelling, grammar and punctuation; Flow of narrative/fluency; Coherence; Word processed ; Correct use of referencing with bibliography; Strict word limit When referencing include the author's name in the main body of the text. Good list of references. Well pr	15	12

esented with appropriate labelling and tables.		
TOTAL	100	73

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