An opportunity to increase sales of clothes

Background

With the development of the Internet, people's life becomes more and more convenient. After finishing busy work, many people choose to buy daily necessities and other luxuries through online shopping instead of shopping in bricks and mortar stores. Clothing accounts for a large proportion of the goods that people purchase online. However, many shoppers have encountered such an experience when shopping online for clothes: after they selected the style and bought it online, they found the clothes were in the wrong size or not fit when they tried them on. Therefore, they returned the clothes and purchased another one. Although they will eventually get suitable clothes, the process may take a month or more. Moreover, some online shop has published size table but the size standards of different clothing brands and regions are not the same, which makes it more difficult for consumers to buy the suitable size when they shopping in the first time. Thus, this situation will bring a terrible experience of online shopping for consumers, and online stores will suffer losses. Some people will choose to buy clothes in physical stores rather than online, which will reduce sales for online stores.

Aim

This project aims to develop a data analysis method to help shoppers choose the most appropriate size of clothes when shopping online to reduce the chances of return and exchange.

The overall aim is broken into several objectives. First, we are going to develop a new app to collect data. Second, we will collect data on human body shape with our new app for use in a training set. We then build and evaluate new data model. Finally, we will validate our method and put it into use.

Research Project

The significance of our project is to help many online shoppers choose the most suitable size of clothing to reduce the chance of return and exchange, which will increase sales. Besides, this will greatly improve their satisfaction with

online shopping, which will ultimately help online shops to increase their profits. The innovation of our project is to use the camera function of people's mobile phones to obtain the body shape data of online shoppers, and analyze the most suitable clothing size for them to help them buy clothes through our data analysis method. This method is different from the traditional way that consumers can only rely on their own experience and shop size comparison table to choose clothes, and can significantly improve the fit of clothing size and customer satisfaction.

Our project is mainly divided into the following five subprojects.

Subproject 1: Developing a mobile application
In order to have a unified standard and straightforward method for collecting people's body shape data, we need to develop a mobile phone app for that in advance. This mobile phone app can change the photos taken to eliminate the appearance details of the body, so that the final images cannot recognize who they are, which aims to avoid privacy-related issues. Participants need to wear tight clothing and take photos from different perspectives according to the app's prompts.

Subproject 2: Designing a reference tool
In the actual situation, since the angle is not so accurate when taking photos, and the ratio of length to width made by different models of mobile phones is also different, we need to design a reference tool for consumers to use as a reference to solve the impact of such problems on the analysis of data. The reference tool should have a square structure or pattern with a graduated scale. By comparing the reference in the photos, we can get the actual data to body shape.

Subproject 3: Data collection
Due to the differences in the body shape of people in different regions as well as that of men and women, we need to collect all kinds of data comprehensively to ensure that we can provide sufficient data samples to train our data models in the following steps. When we collect data on people's body shape, we also need to collect data about the sizes of the clothes that best suit their bodies. The data will also be used to train our model and test its accuracy.

Subproject 4: Data model
We need to build a data model and train it with the data we collected. This step will mainly adopt python, some third-party libraries and recommendation algorithms to build the model. After that, we will evaluate our model.

Subproject 5: Validation and launch
Finally, we need to validate the effectiveness of our approach and put it to use.

Basically, our project is expected to be completed in eight months. Both subproject 1 and subproject 2 will proceed simultaneously at the beginning, followed by subproject 3, subproject 4 and subproject 5.

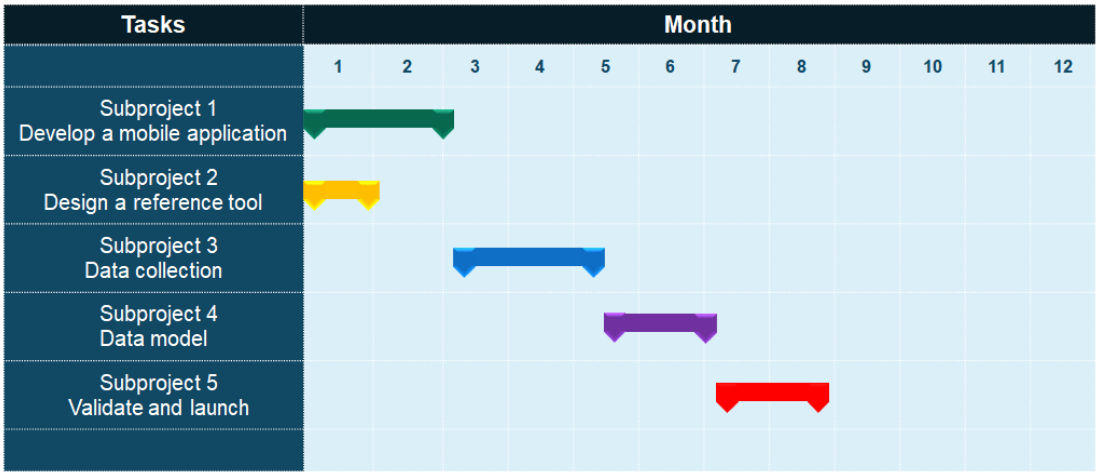

Figure 1: Gantt chart of the subprojects

Budget

Table 1: Project Budget

Item	Cost
Project Manager	$78,400
IT Developer	$14,000
Data Analyst	$48,000
Data Collection Personnel	$146,000
Tester	$12,000
Reference Tool Designer	$6,000
Tool Manufacturing Cost (10,000 tools)	$32,000
Office Equipment	$5,800
Basic Infrastructure	$22,696
Mobile App Server	$3,756
Total	**$368,652**

The budget for our project is about 368,652 Australian dollars. The data collection subproject needs to collect a large amount of data, which needs about ten employees to do this work. Due to the reason that the task requires many employees and lasts about two months, its budget is the largest. We plan to produce 10000 reference tools in advance and then increase the production according to the actual need. Since we have developed a new app, we need to purchase the corresponding cloud service to support it to run. We plan to rent a cloud service for one year. Other costs will calculate according to the actual period of subprojects.

personnel

There are several types of personnel needed to complete this project. First, the project needs a project manager who is mainly responsible for the planning and execution of the whole project and is the key person to ensure the successful completion of our project. At the beginning of the project, we need data collection personnel to collect the body shape data of people as well as the data of their most suitable clothing size. These data will be used as the training set for training the data model. We need data analysts to help us do the data analysis and build the data model. At the same time, we need designers to design simple and portable reference tool for us and find the manufacturers to make it. Since our solution is for the online shop, we also need relevant IT developers to put it into use. Finally, we need some testers to test and collect feedback from consumers to improve our solution.

References

Bao, R., Chen, Z. & Obaidat, M.S. 2018, 'Challenges and techniques in Big data security and privacy: A review', *Security and Privacy*, vol. 1, no. 4, p. e13.

Github Link: https://github.com/DiannanWei/UTS_ML2019_ID12998872
Video Pitch Link: https://youtu.be/S9Q7ZIRDTbk