# MSc Computing Masters Project Proposal

## Project Title

Predicting customer propensity to purchase for an e-commerce company using machine learning (python)

## What problem are you trying to solve?

To help company save money on marketing while increasing their sales by creating targeted or personalized marketing based on customer past behaviour.

## Objectives of the project

The objective of the project is to design a machine learning model that predicts the likelihood of a customer making a purchase in an e-commerce company. The project will involve customer segmentation using the RFM model, to divide the customers into different segments based on their past behaviours. Different machine learning algorithms will be applied and the performances evaluated. The model will incorporate explainable AI to provide transparency in the decision-making process. The project will also involve the development of a user interface to allow for easy interaction with the model. The ultimate goal of the project is to provide insights and recommendations to the e-commerce company on how to increase sales by targeting customers who are most likely to make purchase.

## Methods

* Data collection
* Data preprocessing
* Perform Exploratory data analysis
* Perform RFM Analysis
* Feature engineering
* Modeling Data Creation
* Model building
* Evaluation
* Making predictions
* Interpreting predictions with Explainable AI

## Expected end products

A model that will predict the probability of each customer buying a product for an e-commerce company with the help of the propensity model will be built and deployed. Explainable AI techniques will also be used to make the prediction understandable to humans. A user interphase, python source code and a report will be submitted.

## Ethical Considerations

The datasets used for this project will be collected from [www.Kaggle.com,](http://www.Kaggle.com) a public data repository. The data contained in these datasets does not reveal the real customer's’ identity. The process of the research and the proposed model will not be harmful to anyone.

### Ethics Declaration:

|  |  |  |
| --- | --- | --- |
|  | **True** | **False** |
| My project is entirely literature based and/or technical, | Yes |  |
| My Project does not use any form of participants, | Yes |  |
| My Project does not use external inputs (e.g. liaising with someone in industry), | Yes |  |
| My Project does not require me to do work off campus (e.g. in a company), | Yes |  |
| My Project does not use secondary data sets | Yes |  |

**If you answer “False” to any of these statements you MUST submit your project for review to the ERM** (see Bb for information on how to do this)

## Justification for master's level project

This project is suitable for a master's level project because it follows the right research process, it produces an original work by me which offers solution to the e-commerce sector. It will empower marketers to quickly identify and segment users into homogeneous groups and target them with differentiated and personalized marketing strategies. This in turn will improves user engagement and retention. With the probability scores from propensity modelling, the marketing team can filter only those users who need the actual push (in terms of discounts or coupons) to make a purchase rather than sending coupons to users who would have bought the product anyway thereby saving the company some cost and increasing their profit.