

# 2021 Final Year Project Definition Form

**Project Title:**

*Predicting customer payment behaviour through machine learning*

**Company details:**

Curro Holdings Ltd.  
38 Oxford St, Durbanville, Cape Town, 7550  
www.curro.co.za

**Company background:**

Curro's vision is to make independent school education accessible to more learners throughout southern Africa. Curro was established in 1998 and is the leading for-profit independent school provider in southern Africa. It develops, acquires and manages independent schools for learners from three months to Grade 12.

We believe the purpose of education is to empower every person with the opportunity to achieve their potential as individuals and members of society. We further believe that education is the cornerstone in the development of quality leaders and responsible citizens who will positively impact the economy, environment, and society.

**Project Description:**

As a for-profit, independent school group, cash generated from school fees are a crucial aspect of the Curro Holdings Ltd business model. When customers fail to make their monthly payment, or default on their payment, as it is commonly referred to, it is detrimental to the financial success of a school. This is particularly worrying in the context of a post COVID-19 South Africa, where numerous South African households have lost a source of income.

Numerous techniques have been proposed to improve the debt collecting ability of an organisation, such as discounts or payment agreements, debit order forms, external debt collectors and employing administrative personnel to follow up on outstanding payments. These techniques have varying levels of success and are mostly applied once a customer has defaulted on one or more subsequent months of payment.

Another technique that is often employed by organisations is to apply machine learning algorithms to predict customer payment behaviour, based on relevant data such as their personal profile, credit information and payment history. An invaluable aspect of such a technique, is that it provides an organisation with the ability to pre-empt a missed payment and therefore apply preventative measures and strategies to mitigate such a risk. By implementing such a strategy, Curro Holdings Ltd could also benefit from providing financial support to the correct customer profiles, thus reinforcing their goal of making quality education accessible to more learners throughout Southern Africa.

The objective that should be pursued within this project would be to predict whether a customer will pay their outstanding amounts within the next month, often referred to as customer payment cure. This information will prove extremely helpful in Curro Holding Ltd's endeavour of identifying customers whose accounts need to be written off as bad debt or not. Furthermore, this could enforce or support a more focused approach to debt collection strategies by channelling initiatives and efforts on debtors with higher cure probabilities.

This problem holds significant value for Curro Holdings Ltd in terms of cost savings and quantification of risk. The student will be allowed the opportunity to work closely with a team of Industrial Engineers in practice, while gaining exposure to the innovative company culture at Curro. Furthermore, the student will learn invaluable skills in the realm of machine learning, which will prove extremely helpful on their path towards a successful career.

**Industry mentorship:**

*Willem Moore*

**Industry mentor contact details:**

*Willem Moore*

[Willem.m@curro.co.za](mailto:Willem.m@curro.co.za)

**Project topic application process:**

*Please email all applications for the topic to the relevant Curro mentor for the project.*

**The main objectives of the project are:**

- Research literature pertaining to supervised machine learning algorithms used for customer payment default prediction
- Apply data pre-processing techniques to prepare the data received from Curro in the correct format
- Apply machine learning algorithms to predict whether a customer will cure in the subsequent month

**Specific Industrial Engineering skills (tools/processes/procedures) likely to be used**

- Programming (Python or R)
- Machine learning
- Data manipulation