2021 Final Year Project Definition Form

Project Title:

A machine learning approach towards customer lead classification

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.

Lead scoring is the process of classifying a prospective customer into categories ranked according to probabilities of becoming a qualified sale. A prospective customer that has a high probability of making use of the business's product or service is labelled as a 'hot' lead and conversely a lead deemed to have a low probability of yielding success is labelled as a 'cold' lead. This technique is often applied by marketing teams in order to establish a more focused approach, whereby hot leads are pursued first, thus maximising the probability of yielding positive results with the applied efforts and ensuring that marketing time and resources is spent efficiently. Whether or not a lead is classified as a 'hot' lead is often based on the lead's behaviour, demographics or any other market-specific characteristic that may help determine the level of interest that a prospect has in the business's offering.

The process of determining which metrics qualify a customer as a hot or cold lead is often determined by the intuition, logic and experience of the teams assessing these leads and are often susceptible to human bias. Furthermore, if the process of scoring leads is not automated, it could be very tedious and time-consuming task, which is especially worrying in the context of fast-paced working world where human errors could creep in should such a processed be rushed.

A new and emerging technique in the field of *Customer Relationship Management* (CRM) is to leverage machine learning algorithms to determine a more informed customer lead score, given historical data that was collected through business operations. By employing such a computerised system, it is possible to not only determine which customer leads are deemed as hot or cold, but also to discover which characteristics or metrics of a lead should be considered while evaluating leads. Additionally, businesses could benefit greatly in terms of a reduction in human errors that occur while labelling leads, as well as time required to label such leads.

In the context of independent school group, such as Curro Holdings Ltd, a lead is considered as parents/guardians or learners enquiring about joining one of the schools in the group. Such a lead is deemed converted once parents/guardians have enrolled their learners in the school. Furthermore, leads may be received from various sources, including social media sites, websites, phone calls or even physical interactions with a marketing representative.

The problem, therefore, is to fit machine learning algorithms to historical data collected by Curro and delivering as a result classifications representing whether or not that prospective customers will enrol their learners in a Curro school, given a set of characteristics or features describing the leads. Furthermore, this project hopes to identify hidden or unknown characteristics and features that has a significant effect on customer lead qualification.

This problem holds significant value for Curro in terms of higher returns on marketing investment and an increase in learner numbers. Furthermore, this project could also guide Curro in their decisions of where to deploy new marketing campaigns, physical or digital, so to maximise the likelihood of a successful campaign. 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 field of machine learning, which will prove extremely helpful on their path towards a successful career.

Industry mentorship:

Emile Strasheim

Industrial Engineer

Industry mentor contact details:	*Emile Strasheim*	*Emile.s@curro.co.za*	*087 285 1691*

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 lead classification
- Apply data pre-processing techniques to prepare the data received from Curro in the correct format
- Apply machine learning algorithms to predict a customer lead classification

Specific Industrial Engineering skills (tools/processes/procedures) likely to be used in this project:

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