2021 Final Year Project Definition Form

Project Title:

Improving forecast accuracy and related inventory holding using machine learning algorithms in conjunction with machines linked to IoT.

Company details:

Sonke – Johannesburg, South Africa

www.sonke.org

Company background:

Sonke's purpose is to provide all South Africans with an economic incentive to make environmentally friendly choices.

The poorest South Africans pay a 35% premium for many of their consumer goods, whilst also contributing to unsustainable levels of waste. This is caused predominantly by pack-size-inefficiency. As FMCG companies try to achieve prices that the poor can afford, pack sizes are reduced which leads to increased costs and waste.

Sonke solves these problems by using automated "refill" stations. Consumers are encouraged to bring their own packaging in order to save money and have a positive impact on the environment.

Sonke designs, manufactures and manages automated refill stations. Sonke gives consumers better value for money, increased flexibility and environmentally friendly alternative shopping experience

Project description:

Sonke builds automated refill machines for consumer goods. The management of stock is critical to profitability and cash-flow of the business.

As all our machines are IoT enabled, we have access to vast amounts of data that can be used to forecast sales. The more accurate the sales forecast, the more efficiently the business can operate.

The following variables will sales and need to be incorporated into the machine learning algorithm;

1) *Price of Product*
2) *Competitor Activity (Pricing, Promotions etc)*
3) *Time of Month (Month end spike in sales vs. mid-month doldrums)*
4) *Weather (E.g. rain reduces sales)*

The machine learning algorithm should accurately forecast unit-level sales by day.

Industry mentorship:

Eben de Jongh from Sonke Retail (Support will be provided from Machine Learning experts abroad)			
Industry mentor contact details:	*Eben de Jongh*	*Eben@sonke.org*	*0828235073*
Project topic application process: *Application deadline is 28 February. Early applications are welcome. All applicants will be subject to an interview conducted by myself and head engineer of Sonke.*			
Any other relevant information: *This is a tricky project that will undoubtedly require serious commitment from the student to crack.*			