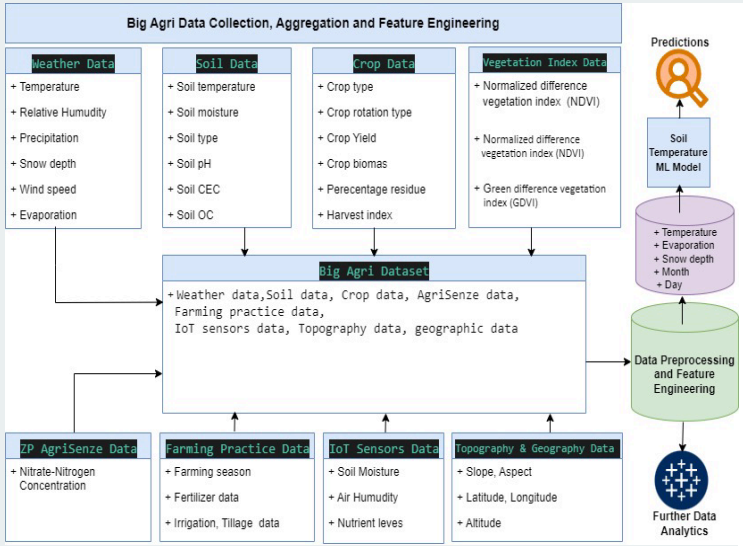

Enhancing Precision Agriculture Decision Making For The Agrisenze™ Soil Nutrient Monitoring Systems Through Big Data Analytics

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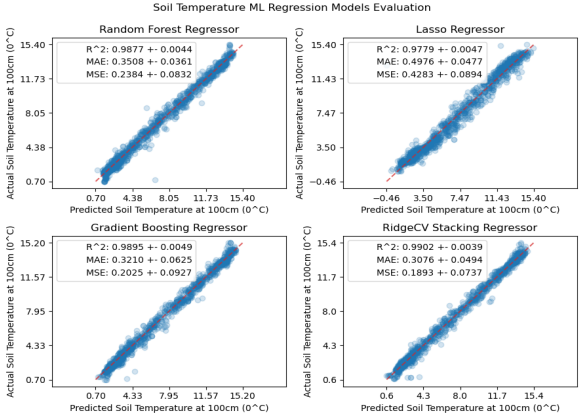
Purpose and aim

To enhance the accuracy and intelligence of AgriSenze solution in monitoring soil over-fertilization and under-fertilization, it is imperative to supplement the solution with additional big agricultural data. Despite the growing volume of agricultural data collected by various stakeholders, making practical use of this "big data" requires a unified interface that can access multiple data sources. This research is centered around creating such an interface, aiming to collect, aggregate, mine, and derive meaningful insights from diverse agricultural parameters. The objective is to enhance AgriSenze's decision-making capabilities. The research involves the development of web APIs for gathering agricultural data from disparate sources and developing a machine learning algorithms to forecast soil temperature, which significantly affects nitrate levels, at varying depths ranging from 2cm to 100cm.

Results

The machine learning based data analytics and feature engineering showed that the average air temperature (in ^{0}C), evaporation (in mm), snow depth (in cm), month and day can be used to predict the soil temperature (in ^{0}C) at different depths with good MAE performance as indicated on the figure to right for soil temperature at 100cm.



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