 CANTILEVER AIML PROTERNSHIP 2025

**ABSTRACT**

# Project Title:

Fertilizer Recommendation

# Team Details:

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## Abstract:

The **Fertilizer Recommendation** System project leverages machine learning techniques to provide precise, data-driven fertilizer recommendations aimed at enhancing crop yield and promoting sustainable agriculture. Traditional fertilizer application methods often result in either overuse or underuse, leading to suboptimal crop production and environmental degradation. This project addresses these challenges by analyzing critical soil attributes such as pH, nitrogen (N), phosphorus (P), potassium (K) levels, moisture content, and crop type, combined with environmental data.

Using a comprehensive dataset gathered from agricultural experiments and historical records, supervised machine learning algorithms—including decision trees, random forests, and support vector machines—are trained to identify patterns and correlations between soil conditions and optimal fertilizer requirements. The system predicts the most suitable type and amount of fertilizer for specific crops under varying conditions, thereby minimizing resource wastage and maximizing efficiency.

The recommendation engine is designed with a user-friendly interface, allowing farmers or agronomists to input soil test results and crop information to receive immediate, actionable advice. This technology-driven approach supports sustainable farming by reducing chemical runoff, lowering costs, and improving crop health. The project demonstrates the significant role of artificial intelligence in modern agriculture, offering a scalable solution adaptable to diverse farming environments and contributing to food security and environmental conservation

**KEYWORDS**: fertilizer, soil measurement, recommender, machine learning, random forest classifier