

**Project Design Phase-I**  
**Proposed Solution**

Date	3 November 2023
Team ID	592104
Project Name	Project - Safeguarding Agriculture: AI-Enabled Prognostication of Farm Insect Threats
Maximum Marks	2 Marks

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Agricultural productivity is often hampered by unpredictable insect infestations, leading to substantial crop losses and economic setbacks for farmers. Traditional methods of pest detection and control are often reactive and not efficient. The challenge is to develop a proactive solution that leverages AI for early detection and prognostication of insect threats to safeguard crops and enhance agricultural yield.
2.	Idea / Solution description	The incorporation of AI-driven technology is the proposed solution, which enables accurate farm bug threat prediction. Modern picture recognition and classification algorithms will be

		<p>used to classify and identify different kinds of insects. For every detected bug, comprehensive profiles with high-resolution photos, taxonomic details, and unique traits will be created. The system will also provide insights into the many stages of these insects' life cycles, behavioral habits, and preferred environments. With so much information at their disposal, farmers will be able to foresee hazards at all phases of life and take customized, environmentally friendly preventive action, which will promote sustainable agriculture practices.</p>
3.	Novelty / Uniqueness	<p>To make identification easier, it provides farmers with detailed profiles of every insect that include high-resolution photos, taxonomy information, and unique traits. Not only that, but the technology goes above and beyond simple identification, offering priceless insights about each detected insect's life cycle stages, behavioral habits, and preferred habitats. With so much information at their disposal, farmers can better predict and manage dangers to their crops at different stages of development, which improves their ability to take timely and focused preventive action for sustainable agricultural practices.</p>
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> <li>Enhanced Crop production: Farmers can reduce crop losses and increase</li> </ul>

		<p>overall production by taking proactive strategies to identify pest threats in advance.</p> <ul style="list-style-type: none"> <li>● Environmental Sustainability: By reducing the need for excessive pesticide use, targeted pest management encourages sustainable and ecologically friendly farming methods.</li> <li>● Cost Reduction: By lowering the need for reactive pest control methods and minimizing crop loss, early diagnosis and prevention result in cost savings.</li> <li>● Empowering Farmers: Providing farmers with actionable insights empowers them to make informed decisions, fostering a sense of control over their crops and livelihoods.</li> </ul>
5.	Business Model (Revenue Model)	<p>The business model for this AI-enabled solution revolves around a subscription-based service tailored for farmers. The subscription tiers can be structured based on the scale of farming operations, ensuring affordability for small-scale farmers while accommodating the needs of larger agricultural enterprises.</p>

6.	Scalability of the Solution	<p>The solution is made to be adaptable to various crop varieties and geographical areas. The technology is simply able to adjust to changing pest trends and incorporate new data sources. Increased user demand can be accommodated via cloud-based infrastructure, and platform adaptation for particular geographic and agricultural settings can be made easier by collaborations with regional agricultural organizations.</p>
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