PROBLEM DESIGN PHASE –I

Proposed Solution Template

Date	06 MAY 2023
Team ID	NM2023TMID11143
Project Name	Intelligent Garbage classification using Deep Learning

PROPOSED SOLUTION TEMPLATE

Project team shall fill the following information in proposed solution Template

S.NO	Parameter	Description
1	Problem statement (Problem to be solved)	Waste management has become a crucial issue in our society due to the increasing amount of garbage that is generated every day. Inefficient waste management often leads to serious consequences such as environmental pollution, soil degradation, and air pollution, which affects human health. A major challenge in waste management is the lack of proper sorting and segregation of waste, which leads to the mixing of different types of waste management systems lead to environmental pollution and health hazards. However, waste sorting and recycling can reduce the negative impact of waste on the environment. The current system of garbage collection and disposal does not effectively segregate waste, leading to a lack of efficient recycling.
2	Idea/Solution description	Our idea is to develop an intelligent garbage classification system that uses deep learning algorithms to segregate waste materials. By leveraging image recognition and classification techniques, we can accurately identify and categorize different types of waste. This system aims to encourage people to sort their garbage correctly, making waste management more efficient and sustainable.
03	Novelty/Uniqueness	Our solution is unique because it uses deep learning algorithms to classify waste materials, eliminating the need for manual sorting. This approach is not currently employed in most waste management systems, which rely on manual labour to sort garbage. The use of deep learning can significantly improve the efficiency of garbage classification and increase recycling rates, leading to a more sustainable

		waste management system.
04	Social Impact/Customer Satisfaction	The social impact of intelligence garbage classifications using deep learning is significant and far-reaching. Some of the major impacts are: 1. Environmental Impact: Garbage is a major environmental issue around the world. Intelligent garbage classification systems can help to reduce the amount of waste that ends up in landfills by improving the accuracy of waste sorting. With deep learning technology, garbage classification can be automated, and the accuracy of is a major environmental problem that has resulted in landfills and oceans filled with waste that will take hundreds or thousands of years to decompose. 2. Employment Opportunities: The implementation of garbage classification using deep learning can create new employment opportunities in the waste management industry. The need for skilled technicians to operate the technology and sort garbage can create jobs and improve the economy. 3. Public Health: Garbage that is not classified properly can cause health hazards for the public. For instance, food waste can attract rodents and other disease-carrying pests. 4. Sustainability: Deep learning can be used to analyze the garbage composition and provide valuable information for city planners and policy 5. Education: The implementation of garbage classification using deep learning can also create awareness among the public about the value of recycling, waste reduction, and the importance of proper disposal of waste. This can lead to a positive change in behaviour towards waste management among individuals. Customer satisfaction: The intelligent garbage classification system offers many benefits to customers. Firstly, it makes garbage disposal and sorting more convenient and less time-

		consuming. Customers would no longer need to separate their garbage manually, as the system can classify it for them. Additionally, increased recycling rates help to reduce pollution and promote a cleaner environment, which is a concern for many individuals.
05	Business Model(Revenue Model)	The business model for intelligence garbage classification using deep learning can be based on a number of models. One possible model is a B2B sales model where the solution is sold to municipalities and waste management companies who are looking to improve their waste sorting processes. The solution can also be sold as a value-added service to waste collection companies, who can then offer it to their clients as part of their waste management the solution is sold to waste management companies or municipalities. Another model could be a B2C model where the solution is sold directly to households to aid in their waste management efforts.
06	Scalability of the solution	- The technology is highly scalable: Deep learning technology used for intelligent garbage classification is highly scalable since it can process large amounts of data in real-time and adjust to changing scenarios. - Increased accuracy: As the system collects more data, it becomes more accurate in predicting and Categorizing waste. - Potential for integration: Intelligent garbage classification can be integrated with other waste management systems, such as transportation and recycling programs. This integration can enhance overall efficiency and sustainability of the waste management process. - Cost-effective: The technology is cost-effective as it eliminates the need for manual sorting and can be applied to a variety of waste streams