HACKATHON

PROBLEM STATEMENTS

PS 1. How can we design safer alternatives and improved application techniques to address health hazards associated with pesticides, reducing human exposure and safeguarding both the environment and public health?

PS 2. How might we develop an affordable specialized vegetable harvester to improve automation and productivity in the agriculture sector, meeting the needs of the masses?

PS 3. How might we develop an innovative, thermally controlled storage system to address challenges in postharvest tomato storage, overcoming limitations in current preservation methods? The goal is to extend shelf life and minimize degradation, marking a significant stride in enhancing storage practices.

PS 4. How might we innovate to address urban excess food waste, hunger-related deaths, and create a logistic network with innovative technology and cost-effective storage solutions? This aims to efficiently transfer surplus food from cities to areas in deficit.

PS 5. How might we innovate in detection methods for mycotoxins, toxic secondary metabolites in food, to minimize contamination and ensure the safety of food processing units? The goal is to enhance current techniques, primarily chromatographic, for more effective results.

PS 6. How can we create an advanced agricultural bot to address challenges faced by small-scale farmers? This involves enhancing crop management, income, and food security through real-time soil testing, pest detection, and autonomous operations, with the aim of doubling agricultural output and income.

PS 7. How we design a cost-effective, energy-efficient small-scale cold storage unit for horticultural produce to extend perishable crop shelf life, specifically catering to the preservation needs of smallscale farmers.

PS 8. How might we develop an effective Harvesting machine for crops that is lightweight, cost-effective, and convenient to handle and transport across various wet fields to address the challenges of the current model?

PS 9. How might we implement semi-automation for the raw cutting process in cashew processing to reduce dependency, increase efficiency, and enhance overall productivity in the cashew industry?

PS 10. How might we develop suitable technology to estimate crop yield, leveraging technology to analyze agricultural data, optimize farming practices, and ensure accurate predictions for improved food production and security?

PS 11. How might we create a system that leverages satellite imagery and machine learning to detect vegetation height beneath transmission lines, anticipate growth patterns, and generate alerts for timely trimming when needed?

PS 12. How might we optimize water management in piped and micro irrigation? Integrating AI to predict crop water needs, automate valves, and boost yield.

PS 13. How might we develop image processing software using machine learning to identify medicinal plants, enhancing authenticity and ensuring integrity in the medicinal plant supply chain?

PS 14. How might a comprehensive strategy be designed to mitigate the environmental impact of plastic degradation in the marine ecosystem? This multifaceted initiative seeks to create effective anti-pollutants, innovative methods for plastic disposal in oceans, tactics to boost algae growth, and the deployment of boats with robots for efficient plastic waste collection.

PS 15. How might we design a cost-effective home composting solution for daily kitchen waste, ensuring quick and odor-free decomposition? The current lack of such an efficient system poses a challenge for homemakers seeking sustainable waste management.

PS 16. How can we design a solution to address the challenge of fugitive dust emissions from stone crusher units & crematorium causing air pollution?

PS 17. How might we develop eco-friendly construction materials, specifically suitable for high-rise buildings, to mitigate the environmental impact of carbon dioxide emissions from cement production, exacerbated by urbanization and excessive concrete use?

PS 18. How we create a solution for efficient autonomous dust cleaning beneath roofs in industries, marriage halls, cinema theaters, and college auditoriums to maintain clean and healthy environments?

PS 19. How might we develop a low-cost automation system to address the labor-intensive manual extraction of dry coir pith? The industry requires an innovative suction system capable of efficiently collecting and transporting pith to manufacturing units, handling various materials simultaneously.

PS 20. How can we reduce the contribution of Cement Industries in global CO2 emissions and come up with alternate sustainable solutions.

PS 21. How can we create an automatic sensor model to address ammonia/H2S gas emissions from bird litter in the poultry sector, managing odor and fly issues? The goal is to assess gas emissions and trigger alerts when limits are exceeded, prompting necessary measures for effective management.

PS 22. How might we develop a sustainable and eco-friendly extraction method for chitosan from shrimp shells to meet the increasing demand for chitosan across various industries?

PS 23. How might we explore the adoption of game-based education to cultivate diverse skills, motivate students with points and leader boards, and ensure inclusivity for students with disabilities? The goal is to enhance learning outcomes and confidence.

PS 24. How might we create a skill/job recommender application using suitable technology, transforming career guidance by leveraging technology to match individuals with suitable jobs, fostering efficient employment and career development?

PS 25. How might we design a cost-effective Myoelectric prosthetic arm using 3D printing, servo motors, Arduino, and Myoware muscle sensors, ensuring affordability without compromising functionality and quality?

PS 26. How can we design an image processing algorithm for portable Xray devices to reduce noise, enhance contrast, and sharpen images without altering critical diagnostic details? This includes considering hardware limitations, ensuring computational efficiency, and validating with diverse datasets for accurate clinical application.

PS 27. How might we utilize AI chatbots and machine learning to address the challenges of incomplete alleviation of depression symptoms, attrition, and loss of follow-up in mental health treatment?

PS 28. How might we develop analytics for hospitals' health-care data, optimizing data utilization to improve patient care, streamline operations, and enhance overall efficiency in healthcare institutions?

PS 29. How might we create a telemedicine robotic kiosk for rural India, utilizing AI, biometric ID, and the e-sanjeevani App for personalized access to expert doctors and timely medication delivery?