Niral Thiruvizha 3.0 - Problem Statement

S.No	Theme Name	Final Problem Statement
1	Agriculture/ Food tech	Design and develop an innovative solution that utilizes technology to improve farming practices, increase crop yields,and reduce waste.The solution should be scalable, sustainable,and accessible to smallholder farmers.
2	Agriculture/ Food tech	How might we develop sound, cost effective storage and warehousing solutions for storing farm produce which can be easily accessed by poorer farmers and can be scaled up to mass production?
3	Agriculture/ Food tech	How might we design an AI driven app incorporating climate modelling, disease management, soil testing, market forecasting which will provide farmers with valuable inputs, guidance on crop management, sustainable agricultural practices. irrigation strategies, use of agricultural inputs and choice of crops?
4	Agriculture/ Food tech	Develop innovative technologies that enhance crop traits such as flood tolerance, pest and disease resistance and increased nutrientccontent without altering plant genes which should reduce reliance on chemical inputs and preserve natural biodiversity
5	Agriculture/ Food tech	How can we develop a practical, cost-effective, and eco-friendly AI-driven ultrasound technology to detect and deter wild animals from entering agricultural fields, while studying the movement of animals from reserve forests to human habitation areas and implementing a warning system to alert nearby localities for effective crop protection and wildlife management?
6	Agriculture/ Food tech	How might we design a cost-effective combined harvester with an integrated precision drying system to efficiently harvest, thresh, and dry paddy grains directly in the field, particularly during the samba season?
7	Agriculture/ Food tech	How can we develop an AI-driven technology to monitor and detect drainage channel blockages, automatically clearing and rectifying these blockages during the rainy season to prevent water inundation?
8	Agriculture/ Food tech	How might we develop an innovative, cost-effective, user-friendly, and sustainable solution to control the rapid spread of water hyacinth in aquatic ecosystems, while converting its biomass into economically and environmentally beneficial products?
9	Agriculture/ Food tech	How might we create an innovative, sustainable, and cost-effective solution to mitigate the impact of high winds on paddy crops in coastal areas, enhancing crop resilience and reducing financial losses for farmers?
10	Agriculture/ Food tech	How to introduce indigenous cow breeds such as Gir, Shahiwal, Tarparkar to the farmers instead of hydrid varieties which is having low yields over the lifetime? How to develop a database of the farmers to promote the indigneous cow breeds?
11	Artificial Intelligence	How might we develop an efficient system to monitor and assess road quality in real-time, using technology to detect issues like potholes, cracks, and wear to improve maintenance and safety?
12	Artificial Intelligence	How might we develop a user-friendly digital assistant providing legal information in multiple languages? Aiming to enhance accessibility and improve legal awareness among marginalized communities in India.
13	Artificial Intelligence	How might we develop a digital solution that allows users to check ongoing court cases associated with a specific survey number by simply entering the village name and survey number, ensuring transparency and easy access to land litigation details?
14	Artificial Intelligence	How might we be able to Develop a system of complaining about the encroachments on the water bodies and ensure time bound action by concerned authorities.
15	Artificial Intelligence	How might we design an IoT-based self-sustained autonomous solution for the maintenance of public toilets? This system would use sensors for automatic cleaning, odor control, and tracking daily usage to ensure cleanliness and efficient management, improving hygiene and reducing manual intervention.
16	Artificial Intelligence	To create an AI-powered nutrition analyzer for fitness enthusiasts, revolutionizing dietary tracking and personalizing nutritional insights to optimize health and fitness goals effectively
17	Artificial Intelligence	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

18	Clean, Green & Renewable energy	How might we develop an innovative and cost-effective solution to enhance the efficiency of solar panels by optimizing energy absorption, reducing losses, and improving performance in varying environmental conditions?
19	Clean, Green & Renewable energy	How might we design a cost-effective home composting solution for daily kitchen waste, ensuring quick and odor-free decomposition?
20	Clean, Green & Renewable energy	How might we create an effective and sustainable solution to reuse or recycle worn-out solar panels and e vehicle battries, minimizing waste and maximizing the recovery of valuable materials for future use?
21	Climate change/ Disaster management	How might we develop a sustainable solution to prevent the abandonment of saltpans, ensuring their continued use and reducing hypersaline conditions, while preserving critical avian habitats and supporting biodiversity?
22	Climate change/ Disaster management	How might we develop an effective and sustainable solution to control the spread and presence of Mucuna bracteata within forest environments, protecting native species and preserving biodiversity?
23	Climate change/ Disaster management	How might we develop AI/ML-based technology to efficiently detect avalanche victims in harsh conditions, utilizing innovative ground-penetrating radar alternatives to improve detection accuracy and response times?
24	Climate change/ Disaster management	How might we develop a cost-effective and innovative solution to predict, monitor, and mitigate flooding risks in vulnerable coastal and urban regions using data-driven and technology-enabled approaches?
25	Climate change/ Disaster management	Develop a suitable technology to provide prior intimation to people that natural calamities like Tsunami, Heavy rainfall, cyclones, land slides, etc…, going to occur.
26	Construction/ Building technology	How might we design cost-effective, prefabricated housing structures for tribal communities in interior forest areas, ensuring durability, environmental sustainability, and easy assembly in remote locations?
27	Information/ Communication Technology	Development of software to analyze the reuseage of water viz-a-viz CTO / Consumption.
28	Information/ Communication Technology	Development of an APP for data updation of the Allottees / industries located in SIPCOT Industrial Park on Investment / employment / water / power/ turnover / CSR activities etc.
29	Information/ Communication Technology	Development of Automation software for effective monitoring of project implementation in the allotted plot and compliance of terms & conditions stipulated in the Allotment Order / Lease deed including commitment of Investment / employment, refund of Caution deposit, land cost subsidy etc.
30	Information/ Communication Technology	How might we develop a smart, economical solution to digitize and monitor the growth measurements (height and weight) of children, track attendance without overburdening server space, and improve ICDS enrollment by attracting public engagement in Anganwadi services?
31	Information/ Communication Technology	How might we develop a blockchain-based application to identify and counter fake social media profiles? Tailored for investigative agencies and law enforcement, enhancing profile authenticity and security.
32	Information/ Communication Technology	Kanniyakumari known for it’s green cover and beautiful lake has no dedicated verified portal for tourist to know all the information and book accommodation. A one stop page will greatly boost tourist economy and tribal livelihood. How might we able to develop a solution for the same
33	Information/ Communication Technology	Shall we create a database to maintain Government Land Records alone. Also GIS based mapping of Government land should be done to monitor real time encroachment and protection of Government land.
34	Information/ Communication Technology	How might we create a centralized Learning Management System that integrates user logins, course enrollment, attendance, assessments, and certifications into a seamless and intuitive dashboard?
35	Information/ Communication Technology	How might an innovative solution address communication challenges in remote areas, such as hilly and forest regions with weak or no network coverage? The goal is to develop an affordable and accessible emergency communication system, considering that satellite phones are financiallyunfeasible for most of the population.
36	Med tech/ Bio tech/ Health tech	How can we design an image processing algorithm for portable X-ray 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.

37	Med tech/ Bio tech/ Health tech	How might we develop a centralized digital platform to connect all PHCs, Upgraded PHCs, and Sub-Centres with the Deputy Director of Health Services (DDHS), enabling real-time monitoring of doctor attendance, healthcare services, and automated absenteeism alerts to improve healthcare delivery across divisions?
38	Robotics/ Drone/ Industry 4.0	How might we develop a GIS-based solution for automating the approximate assessment of property tax? This system would streamline the process and enhance accuracy in property valuation for tax purposes, ensuring more efficient and transparent tax management.
39	Robotics/ Drone/ Industry 4.0	How can we design an economical device, such as robotic boats, to efficiently collect plastic waste in marine ecosystems and integrate anti-pollutant technologies to protect and sustain the marine environment?
40	Rural & Urban development/ Manufacturing/ Engineering Technology	How might we develop an automated water distribution system that ensures 55 LPCD per person, prevents wastage, and reduces electricity usage in rural households?
41	Smart Education/ Edu-tech/ Skill Development	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?
42	Smart Education/ Edu-tech/ Skill Development	How to provide smart education to the poor (below poverty line) students inorder to improve their skills (Abacus/ Communication Skills, etc) based on their students interest during Saturday, Sunday and Holidays.
43	Smart Education/ Edu-tech/ Skill Development	How can we develop an accessible platform for visually and hearing-impaired students, integrating sign language and visual aids to enhance accessibility and comprehension?
44	Solid Waste/ Bio-waste/ E-waste	Design a smart waste collection system that allows citizens to segregate the various types of solid waste they want to dispose and the municipal authorities to efficiently collect the same. The system should be mobile app (Android) based.
45	Solid Waste/ Bio-waste/ E-waste	How might we design an extendable, adjustable-hand fork for sanitation workers (Thooimai Paniyalargal) in rural areas, allowing them to safely and efficiently separate plastic waste from organic waste while minimizing direct contact and improving safety and comfort?
46	Solid Waste/ Bio-waste/ E-waste	How might we design compact, cost effective, non polluting environment-friendly waste management systems thereby overcoming shortage of suitable land and addressing chronic waste management issues in densely populated areas?
47	Solid Waste/ Bio-waste/ E-waste	How might we develop a sustainable solution to reuse or recycle scrap generated in the rubber industry (such as from manufacturers of caskets, bushes, and other rubber components) to minimize waste and promote resource efficiency?
48	Solid Waste/ Bio-waste/ E-waste	Design a home level cost effective safety technology to dispose Solid waste and e- waste by without affecting environment.
49	Transportation/ Logistics/ Smart vehicles	Develop a GPS - enabled tracking and monitoring system for vehicles transporting earth excavated under permitted conditions. The System should ensure real - time tracking of trips, verify compliance with excavation limits and prevent illegal mining activities by detecting unauthorized or repeated trips.