

SANKALCHAND PATEL COLLEGE OF ENGINEERING
Ambaji-Gandhinagar State Highway,
Visnagar-384315.
District : Mehsana, Gujarat (INDIA)

PROBLEM STATEMENTS

PS_ID	PROBLEM STATEMENT	DESCRIPTION	THEME	CATEGORY
HFT_PS_01	Identify Deepfake Images and Videos	Create a Solution to identify Deepfake images and videos generated by ai.	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_02	Smart Message System for Power Outage	For above issue, we have to do proper mapping of consumers with Feeder and TC centre in the system. Feeder & TC centre will have attached device which will be used to send signal of power failure to system if any type of power failure occur. After that, system will send instant sms/email/push notification to consumers of power outage. After site visiting, concern officers will enter estimate restoration time of power in system and will send sms/email/push notification to consumers for the same.	Smart Cities, Urban Mobility & Infrastructure	Hardware
HFT_PS_03	Smart Traffic Junction Using Emerging Tech	Inefficient Traffic Management: Static traffic light systems fail to adapt to fluctuating traffic densities, causing delays and bottlenecks. Lack of Real-Time Monitoring: Limited surveillance and data collection hinder authorities from responding promptly to accidents, violations, and changing traffic conditions. Pedestrian and Cyclist Safety: Insufficient infrastructure and monitoring systems lead to a higher risk of accidents for vulnerable road users. Emergency Response Delays: Emergency vehicles often face significant delays due to uncoordinated traffic systems. Environmental Impact: Inefficient traffic flow contributes to increased fuel consumption and greenhouse gas emissions.	Smart Cities, Urban Mobility & Infrastructure	Software
HFT_PS_04	AI-Based Disaster Message Detection from Social Media	It is difficult to check the authenticity of social media tweets/messages and originator without help of police & social media trained professional. As during nature disaster people are generally just repost/forward the message without checking the facts. It is not easy to find informative data from massive unrelated and unnecessary social media messages for analysis	Artificial Intelligence & Emerging AI Trends	Software

HFT_PS_05	AI Surveillance Camera for Unusual Objects/Behavior	This project involves developing an AI-powered surveillance system that processes live camera feeds to automatically detect unusual objects or suspicious behavior in real-time. The system leverages object recognition and activity analysis to enhance security by instantly notifying users of potential threats. It can be applied in areas such as public spaces, homes, or commercial buildings for proactive monitoring and rapid response.	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_06	App Connecting Farmers to Markets	Build a mobile app that connects farmers directly with consumers and retailers, reducing reliance on middlemen and enabling fairer pricing	Agritech, Food Safety & Water Systems	Software
HFT_PS_07	Digital Platform for Tribal Arts	No dedicated digital platform for tribal craft marketing - Limited access to urban markets and international buyers - poor documentation of Traditional techniques and designs - Lack of standardized pricing and quality certification - Difficulty in managing online transactions and logistics - Risk of Traditional knowledge being lost with older generation	Digital Transformation , Web3 & Blockchain	Software
HFT_PS_08	AI Citywide Surveillance System	An intelligent video analytics solution to analyse the CCTV footage and generate automated alerts for undesirable & unexpected events. Like Accidents, Pedestrian Block, Unwanted Crowd Gathering	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_09	Plug-and-Play AI Surveillance for Waste Dump Blackspots	AI Enabled Surveillance system for monitoring the Blackspots for waste management. This will help the city corporation in tackling the waste thrown on open spaces, grounds and parks.	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_10	AI Traffic Enforcement and Smart Signal System	To overcome the problems of traffic management, solutions that can improve traffic signal controlling, violation detection and e-challan generation, public address systems are being invited.	Smart Cities, Urban Mobility & Infrastructure	Software
HFT_PS_11	Automated Waste Segregation System	Automatic solid waste (into dry, wet and hazardous waste) segregation system to reduce manual intervention and improve the waste disposal cycle.	Smart Cities, Urban Mobility & Infrastructure	Hardware

HFT_PS_12	Automated Wastewater Sampling and Monitoring	This project focuses on developing an automated wastewater sampling system that collects composite samples over 3 to 6 hours while minimizing human exposure. It should be capable of operating in hazardous or hard-to-reach sewage areas and measure parameters like pH and temperature. The system must store samples at 4°C, ensure sterilization after each use, and maintain a cold chain during transport to the lab. Continuous sampling is required for 12 weeks, with full maintenance and repair support.	Healthcare Innovation & Assistive Technology	Hardware
HFT_PS_13	Septic Tank and Sewer Blockage Alert System	Automated tracking of volume levels., Automatic alert generation system for cleaning and eliminating blockages., Minimal human intervention	Civic Technology & Digital Governance	Hardware
HFT_PS_14	Cleaning Water Bodies of Trash	In several water bodies, the problem is that water bodies are filled with trash including plastic waste, moss, garbage etc. Thorough cleaning of the water bodies and efficient processing of the waste removed from them, thereby making the water bodies clean and useful for the use of the public	Climate Tech, Sustainability & Energy	Hardware
HFT_PS_15	Flood Early Warning System	A continuous flood monitoring and alerting system for citizens residing in low lying areas during the torrential monsoons. Monitoring the quantum of rain and threshold level of flooding at river banks. Broadcast weather forecast details/alerts at least 24 - 48 hours prior. Predictive Early warning mechanism to alert the concerned departments and officials to enforce the right action. To have a database on the predictions to know the pattern of the rainfall.	Climate Tech, Sustainability & Energy	Software
HFT_PS_16	Predictive Maintenance for Factories/Vehicles	Create a system for factories or vehicles that uses sensor data to predict when maintenance is due, reducing downtime.	IoT, Edge Computing & Advanced Technologies	Hardware

HFT_PS_17	Air Pollution Flag and Engagement Platform	This project aims to develop a real-time, map-based air pollution monitoring system that leverages AI and community participation to enhance environmental tracking. The system will use AI-based color detection of specially designed flags to assess air quality levels visually. Citizens, ward officers, and participants can maintain a personalized inventory to record and track the number of flags detected. The platform will also include social media integration, encouraging users to share their involvement in the Air Quality Detection Challenge. A mobile application will serve as the central interface, with potential integration into the Command and Control Center (CCC) for centralized monitoring and management.	Climate Tech, Sustainability & Energy	Software
HFT_PS_18	Digital Permit Processing System for Local Govt.	Local businesses and residents often face long waiting times and bureaucratic hurdles when applying for permits and licenses. Design a digital solution that streamlines permit application, document submission, status tracking, and communication between applicants and local authorities, reducing processing time and improving transparency.	Civic Technology & Digital Governance	Software
HFT_PS_19	Platform for Reporting Municipal Issues	Civic issues like potholes, broken streetlights, and garbage pile-ups often go unaddressed due to inefficient reporting and tracking mechanisms. Develop a mobile or web platform where citizens can report issues using photos and location data, and municipal staff can prioritize, manage, and resolve these issues with real-time updates to the public	Civic Technology & Digital Governance	Software
HFT_PS_20	Supply Chain Resilience & Traceability Tool	Local industries and retailers struggle to trace and adapt to disruptions in their supply chain, leading to out-of-stock situations and financial loss. Build a supply chain management tool that visualizes product flow, provides early warnings of potential delays or shortages, and suggests alternative routes or suppliers	Cross-Domain Tech & Ethical Innovation	Software

HFT_PS_21	Adaptive Notification Filtering Using AI	Develop a context-aware notification manager (for mobile or desktop) that intelligently filters and prioritizes user alerts based on activity (meeting, focus mode), location, and personal priorities. The system should learn user routines and apply dynamic, explainable rules to minimize distractions.	Healthcare Innovation & Assistive Technology	Software
HFT_PS_22	Web-based Credential Issuing & Verification	Build a web-based platform enabling individuals and organizations to issue, store, and verify digital credentials (education, training, permits) using open standards and interoperability (e.g., W3C Verifiable Credentials). The system should allow secure sharing without exposing excess personal info.	Educational Technology & Learning Innovation	Software
HFT_PS_23	Age Verification Using Zero-Knowledge Proofs	Construct a software service that provides age verification for online purchases or content access using zero-knowledge proofs (ZKP), allowing users to prove eligibility without revealing DOB or extraneous details	Digital Transformation , Web3 & Blockchain	Software
HFT_PS_24	Digital Consent Vault for Minors	Develop an app/platform for managing, requesting, and recording parental or guardian digital consents for minors (signup, media, academic data), with time-based expiration and granular revocation—standardizing safety in children’s digital experiences	Cross-Domain Tech & Ethical Innovation	Software
HFT_PS_25	Personal Productivity Digital Twin	Create a “digital twin” for individuals that securely logs their daily digital and physical activities, summarizes patterns, and recommends tailored changes for work-life balance, focus, or creativity while strictly respecting privacy.	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_26	Volunteer Hour Tracking Tool	Make a simple online tool for individuals or nonprofit clubs to log volunteering hours, assign activity types, and generate shareable summary reports at the end of each month—without complex sign-ups or forms.	Cross-Domain Tech & Ethical Innovation	Software
HFT_PS_27	AI “What-If” Decision Making Simulator	Build an app where users input a real-life dilemma (career choice, move to a new city, change a habit) and receive multiple branching scenario simulations powered by AI, combining historical data, psychology models, and user input to visualize diverse possible outcomes—helping people make more mindful, informed decisions.	Artificial Intelligence & Emerging AI Trends	Software

HFT_PS_28	Detect Idle Government Assets Using Geospatial Data	Thousands of government-built assets (water tanks, hostels, schools, parks, convention halls) remain unused or underutilized due to poor awareness, gaps in demand forecasting, or bureaucratic inertia. Design a system that uses data (remote sensing, public feedback, digital mapping) to identify idle public assets in real time, automatically flagging for reallocation, repurposing, or public use.	Civic Technology & Digital Governance	Software
HFT_PS_29	Tool for Remixing and Evolving Memes	Design a tool that generates new, unpredictable internet memes by remixing trending images, news stories, and user-contributed jokes. Add features for collaborative meme "battles," voting, and live meme evolution—turning the hackathon into a real-time meme laboratory.	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_30	Ephemeral Knowledge Capture Platform	A vast amount of valuable information—solutions, insights, or hacks—is exchanged in fleeting digital conversations (chats, video calls, voice notes), then forgotten or lost. Create a tool that passively and consensually captures, summarizes, and categorizes these "invisible" knowledge moments across platforms, making them searchable and usable for future problem-solving.	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_31	Unified AI Resource Finder Platform	AI models, datasets, and tools are scattered across the web, making discovery and selection difficult. Create a single platform or app where users can easily search, compare, and access the best AI models, datasets, benchmarks, and related tools—complete with rankings, compatibility suggestions, community ratings, and ethical or licensing information—to streamline AI project development	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_32	Community-Based AI Prompt Recipe Platform	A searchable, community-driven platform where users share, rate, and remix creative and effective prompt "recipes" for LLMs and generative AI, complete with output examples and use-case tagging.	Artificial Intelligence & Emerging AI Trends	Software

HFT_PS_33	AI Tool Recommendation System	With so many AI tools available, users struggle to find the best one for their specific needs. Create a website or app that helps users search for, compare, and discover AI tools—like ChatGPT , Perplexity, claud, gemini, etc..(add more for any or each particular task)—based on their intended tasks, with clear recommendations, usage examples, and performance insights for each option.	Artificial Intelligence & Emerging AI Trends	Software
HFT_PS_34	Adaptive Prosthetic Equipment for Amputees	Active Prosthetic ankle and adaptive equipment for bike riding in lower limb amputees	Healthcare Innovation & Assistive Technology	Hardware
HFT_PS_35	Geo-location Without Internet or Network	In areas with no mobile network or internet access, smartphones often struggle to determine the user's location. GPS can work without a network, but other methods, like map services or location sharing, typically require an internet connection. This problem is critical in remote locations, emergencies, or off-grid situations, where users may not have access to connectivity but still need to know their geo-location. The challenge is to develop a system that enables smartphones to accurately identify the user's location using only onboard sensors (e.g., GPS, accelerometer, magnetometer) without relying on internet or mobile network services. The solution should also consider power consumption and usability in environments with limited resources.	IoT, Edge Computing & Advanced Technologies	Software
HFT_PS_36	Portable Steroid/Grain Content Detection in Milk/Meat	Steroid residues in milk and meat products can pose serious health risks. Detecting these substances typically requires expensive lab tests, which are not always practical or accessible for regular monitoring. There is a need for a portable, cost-effective device that can quickly and accurately measure steroid content in these products. Such a device would help producers, regulators, and consumers ensure the safety and quality of food, without relying on complex laboratory processes. The challenge is to create a simple, affordable tool that detects steroid residues in milk and meat, providing accurate, real-time results for everyday use in the food industry.	Agritech, Food Safety & Water Systems	Hardware

HFT_PS_37	Portable Pesticide Detector for Produce	<p>The use of pesticides and other harmful chemicals in agriculture can lead to dangerous residue levels in fruits and vegetables, posing health risks to consumers. Current methods for testing these residues are often time-consuming, expensive, and require specialized equipment not easily accessible for everyday use. There is a need for a portable, affordable device capable of detecting harmful chemicals like pesticides, herbicides, and other toxins in fruits and vegetables. Such a device would enable quick, on-site testing by farmers, vendors, and consumers, ensuring the safety and quality of produce. The challenge is to develop a user-friendly, cost-effective tool that can provide accurate results for harmful chemicals in real-time, making it suitable for widespread use in the agriculture and food industries.</p>	Agritech, Food Safety & Water Systems	Hardware
HFT_PS_38	Renewable Energy Innovation Platform	<p>As the demand for clean, sustainable energy grows, optimizing the generation and management of renewable energy sources such as solar, wind, and hydropower becomes increasingly critical. Despite their potential, current renewable energy systems often face challenges like intermittency, inefficiency in energy storage, and suboptimal integration with existing grids. There is a need for innovative solutions that can improve the efficiency, reliability, and scalability of renewable energy systems. These solutions should address issues such as energy storage, distribution, and better prediction of energy generation based on environmental conditions. The challenge is to develop new, groundbreaking ideas or technologies that enhance the generation, storage, and management of renewable energy, making it more affordable and accessible while ensuring a consistent and sustainable energy supply.</p>	Climate Tech, Sustainability & Energy	Hardware
HFT_PS_39	Seamless Cross-Chain Asset Transactions	<p>Users and businesses struggle to transfer digital assets and data between different blockchain networks due to poor interoperability and complex processes. Create a solution that enables fast, secure, and user-friendly cross-chain transactions, making asset movement and data sharing seamless across multiple blockchains.</p>	Digital Transformation , Web3 & Blockchain	Software

HFT_PS_40	Rapid-Deploy Shelters for Disasters	The shelters should be built in minimal time duration (Maximum 48 hours).The build-up area should be at least 300 sq. ft.The shelter built should be durable enough to withstand the conditions prevailing at that time.The materials used should be eco-friendly	Cross-Domain Tech & Ethical Innovation	Hardware
HFT_PS_41	Fault Detection in Drainage Pumps	There are a number of Drainage Water Pumping Stations in the city, due to the lack of a centralised & organised system for monitoring, maintenance of these pumping stations is laborious & time-consuming. Identifying faults and blockages in the pumping station is being done manually, based on grievances raised from citizens, and it takes more than two to three days to identify & locate faults and resolve them. A centralised system that can detect faults real-time and report to the relevant authorities can address this challenge.1. Detects and notify faults real-time through mobile/web apps.2. Identification of the type of fault.3. Geo-tagged system to locate the faulty pumps in the city.	Civic Technology & Digital Governance	Hardware
HFT_PS_42	Intelligent Fault Monitoring for Streetlights	1. Identification & alerting of the type of fault—non-functioning of lights, leakage of current, and breakage of cable.2. Identification of the exact location of the faulty street light in the city.	Smart Cities, Urban Mobility & Infrastructure	Hardware
HFT_PS_43	Smart Parking Solution with EV Infrastructure	Development of B2C Mobile application to navigate parking, pre-book slots and digital payment.Establish Smart parking solution for MLCPs, road side parking & private parking Spaces.Central dashboard for monitoring site occupancy and daily/monthly revenues.Create dedicated EV Zones with necessary infrastructure.Real-time parking space availability in a particular area in the city. Occupancy information of parking lots. Location & pre-booking of available parking spaces. Payment of parking fees. Information on parking rules violators & overstaying vehicles.	Smart Cities, Urban Mobility & Infrastructure	Software

HFT_PS_44	Underground Fiber Protection During Construction	During road construction, accidental damage to underground fiber optic cables often occurs, leading to disruptions in communication and data services. There is a lack of effective automated systems to alert construction crews about the proximity of these critical infrastructures, resulting in costly damage and service interruptions.	Smart Cities, Urban Mobility & Infrastructure	Hardware
HFT_PS_45	Real-Time Water Leak and Quality Monitoring	Water pipeline systems often face issues like leaks, contamination, and inconsistent water quality. Existing monitoring methods are reactive and lack real-time tracking, which makes it difficult to detect and address these problems promptly, leading to inefficiencies, wastage, and potential public health risks.	Smart Cities, Urban Mobility & Infrastructure	Hardware
HFT_PS_46	Optimize Informal Transport Options	The underutilization of two-wheelers, auto-rickshaws, and app-based taxis in urban areas leads to inefficiencies in intermediate transportation. There is no integrated system to efficiently match supply with demand, resulting in delays, traffic congestion, and reduced operational efficiency for these transport modes	AgriTech, Food Safety & Water Systems	Software
HFT_PS_47	Personalized Career Guidance Using Data/AI	Many students struggle with career decision-making due to a lack of personalized, data-driven guidance. Existing resources often provide generic career advice that doesn't consider individual skills, interests, or evolving job market trends, leaving students uncertain about their career paths and choices.	Educational Technology & Learning Innovation	Software
HFT_PS_48	Rehab via VR & AI for Physiotherapy	Physiotherapy rehabilitation can be challenging for patients, especially when performing exercises at home. Without real-time guidance and feedback, patients often struggle to perform exercises correctly, which may lead to slower recovery, improper rehabilitation, and increased chances of re-injury.	Healthcare Innovation & Assistive Technology	Software
HFT_PS_49	Accessible Quantum Computing Platform	Most industries cannot leverage the power of quantum computing due to a lack of accessible development tools and expertise. Create a platform that allows businesses or researchers to easily simulate, test, and deploy quantum algorithms for real-world applications such as finance, logistics, or drug discovery	IoT, Edge Computing & Advanced Technologies	Software

HFT_PS_50	Digital Queue System for Public Services	Create a virtual token and queue management app for government offices, hospitals, or municipal services. Users can join queues remotely, check real-time waiting status, and receive notifications to reduce physical crowding.	Civic Technology & Digital Governance	Software
HFT_PS_51	Integrated City Water Supply Management Dashboard	Creation of Dashboard/Portal/App vis.a.vis solution to integrate information on City water supply. Create a common platform (both technology and institutional) for various stakeholders (water suppliers from the private and public sector) to ensure adequate water supply to the city and its interlands, by bridging/solving the existing demand-supply gaps in terms of water supply and institutional mechanisms functioning in silos. This challenge can help Kohima overcome the acute water shortage faced by its citizens during the annual dry seasons.	Civic Technology & Digital Governance	Hardware
HFT_PS_52	Real-Time Lake Water Quality & Species Monitoring	A solution to continuously monitor the lake's water quality and water level alter the concerned authority when the quality level goes below a predefined benchmark.To monitor the following parameters in lake water - temperature, pH level, BOD, sulphate, calcium, magnesium, sodium, potassium, TDS and TSS, etc.To monitor algae, water hyacinth & other species growth and alert if it exceeds the predefined threshold The quality of water to be benchmarked as category A, as per Water Quality Criteria specified in National Water Quality Monitoring Programme	Climate Tech, Sustainability & Energy	Hardware
HFT_PS_53	Waterlogging Detection and Prediction System	Detection & prediction of waterlogging & prescription of mitigation measures across the city to prevent overflow of water into streets.Real-time monitoring of waterlogging in streets and roads.Prediction of possible areas where waterlogging may occur. Prescription of mitigation measures that the users can follow.	Smart Cities, Urban Mobility & Infrastructure	Hardware
HFT_PS_54	Smart Microclimate Sensor Network	Develop a robust and ultra-low-cost network of environmental sensors to measure hyperlocal temperature, humidity, air quality, noise, and light across a city. Ensure devices can sync data wirelessly, operate on minimal power, and generate real-time analytics for urban planners and residents.	Climate Tech, Sustainability & Energy	Hardware

HFT_PS_55	Emergency Wearable Navigator for Visually Impaired	Create a compact, wearable device that provides real-time haptic or auditory navigation instructions to visually impaired users during emergencies, such as building evacuations. Use local sensors, obstacle detection, and mesh networking to ensure guidance works even without internet connectivity.	Healthcare Innovation & Assistive Technology	Hardware
HFT_PS_56	Portable Water Quality Analyzer	Engineers are challenged to supply accessible and affordable water testing solutions. Design a portable device that quickly measures pH, heavy metals, and dissolved solids in various water sources, and syncs results wirelessly to mobile devices or public dashboards for instant safety alerts	Healthcare Innovation & Assistive Technology	Hardware
HFT_PS_57	Convert Kinetic Gym Energy into Electricity	Create a hardware system to capture and convert kinetic energy from exercise equipment (like treadmills and stationary bikes) into usable electricity for gym lighting or device charging, supporting sustainable energy practices in athletic facilities.	Climate Tech, Sustainability & Energy	Hardware
HFT_PS_58	AI-Enabled Smart Plug for Energy Savings	Many homes and offices waste power on idle electronics. Design an intelligent, AI-enabled plug or power strip that learns usage patterns, detects abnormal consumption, and can remotely disconnect devices to optimize energy consumption and prevent electrical hazards	Climate Tech, Sustainability & Energy	Hardware
HFT_PS_59	Automated Health Data Logger	Accuracy and ease are lacking in routine health data monitoring, especially in remote areas. Construct a Bluetooth-enabled device for home or clinic use that automatically records health metrics (temperature, ECG, BP, SpO ₂) and securely syncs with digital health records.	Healthcare Innovation & Assistive Technology	Hardware
HFT_PS_60	Diagnostic Probe for Plant Illness	Farmers and gardeners often lack fast, accurate information about plant health in the field. Create a handheld sensor probe that quickly diagnoses plant stress (from pests, disease, or nutrient imbalance) via electrical, moisture, or optical measurements, syncing findings to a mobile device for actionable advice	AgriTech, Food Safety & Water Systems	Hardware

HFT_PS_61	Smart Medication Reminder and Dispenser	Many patients with chronic conditions miss doses due to forgetfulness or complex regimens, risking health complications. Design a hardware medication dispenser that tracks, reminds, and dispenses prescriptions on schedule, logging adherence and alerting caregivers for missed doses	Healthcare Innovation & Assistive Technology	Hardware
HFT_PS_62	Tool for Emotional Digital "Decluttering"	As digital content accumulates, people rarely delete old files, photos, or emails, leading to digital clutter, potential privacy risks, and data anxiety. Design a system that encourages mindful deletion and digital "spring cleaning," balancing user emotional attachment with data hygiene, and offering gentle, creative prompts for confident, regret-free removal.	Healthcare Innovation & Assistive Technology	Hardware