ID	**PROBLEM STATEMENT**	**DESCRIPTION**
PB1	Create a blockchain-based efficient supply chain solution for the Indian markets, which solves problems like invoice validation and transaction time.	The challenge is to optimize the Indian supply chain by addressing issues like invoice validation delays and extended transaction times. The proposed blockchain-based solution aims to streamline these processes by leveraging the transparency and decentralization features of blockchain technology. Through a shared and immutable ledger, stakeholders across the supply chain can benefit from automated and validated invoice processes facilitated by smart contracts. This not only reduces the likelihood of errors and disputes but also accelerates transaction times by eliminating intermediaries. The decentralized and secure nature of the blockchain fosters trust among participants, contributing to a more efficient and transparent supply chain environment in the Indian markets.
PB2	Bioenergy: How can it be harnessed for generation of electrical power ?	Bioenergy can be harnessed for the generation of electrical power through various processes that involve the conversion of organic materials into electricity. One common method is biomass combustion, where organic materials such as wood, crop residues, or animal waste are burned to produce heat, which is then used to generate steam and drive turbines connected to generators. Come up with such a process which is more efficient.
PB3	Solid waste management in the college campus.	Generation of garden waste is more in our college campus. Currently we are just burning it. Sustainable solution is required for the green campus. If we manage the waste 100% at campus itself then we can make our institute campus better & cleaner.
PB4	Solution to Water leakages	In different institutes, problem of water leakage/wastage is more often. Water timings are such that the taps remain open and often wastage of water occurs.
PB5	Portable low cost Water filter.	Water borne disease and other problems due to impure water is major in Health Problems. This project will help for village people to safeguard their health.
PB6	Plastic waste in Bituminous Road utilization construction	Plastic waste is problematic in destroy. It can be used in bituminous road construction where it makes water repellent layer. Roads also having little or no effect due water logging on the roads.
PB7	Smart Institute information display system	The general notice and information regarding the institute or premises or staff members or exam hall information is sometime not mentioned or circulated properly. So many a times, students or visitors face difficulty locating a place within the premise or finding particular person’s office and precious time is lost in doing so. A lot of paperwork is also needed to circulate the notice every time an event or seminars are scheduled in educational institutes.

PB8	Online Hostel Admission (Hostel Management System-HMS)	Hostel seen as a home for students when staying away from their home. It has large well ventilated dormitories and single rooms and is situated in the college premises. Providing clean and calm hostel accommodation is one of the key responsible of management. To manage the hostel facilities, a lot of data need to be maintained such as number of student hostel can accommodate, hostel rules and regulation, hostel fee, hostel in and out of student, guest and visitor record and so on. So, this needs the system which has an ability to capture all kind of data and information and analyze it properly for smooth functioning of the hostel.
PB9	Digital India – Digital BVM	Traditional offices have paper-based filing systems, which may include filing cabinets, folders, shelves, microfiche systems, and drawing cabinets, all of which require maintenance, equipment, considerable space, and are resource-intensive.Once computer data is printed on paper, it becomes out-of-sync with computer database updates. Paper is difficult to search and arrange in multiple sort arrangements, and similar paper data stored in multiple locations is often difficult and costly to track and update.A paperless office/Institute would have a single-source collection point for distributed database updates and a publish-subscribe system.
PB10	Disaster management using IoT	Develop a system it automatically start fire extinguisher in case of fire in lab. It also inform Principal or lab assistant about event and location. In case of flood situation and earthquake also it also take necessary precautions. A system of interconnected smart modules is developed as a way to enable centralized data acquisition as well as provide an interlinked network for transmission of data in absence of any existing infrastructure. Ensuring efficient mechanism for identification, assessment and monitoring of disaster risks. Develop contemporary forecasting and early warning system.
PB11	Low Cost Night Vision System for Intruder Detection	The growth in production of Android devices has resulted in greater functionalities as well as lower costs. This has made previously more expensive systems such as night vision affordable for more businesses and end users. As the security is the key to safe life, there is a crucial need of design and implementation of a robust and low cost night vision systems. The system should detect the human intruders under low light conditions (such as indoor, outdoor, night time) from CCTV footage and should detect the intruders successfully.
PB12	Cost effective solution to save energy in places like classrooms and labs.	Cost effective Energy savings of Corridor/Class rooms/Laboratory/Staff Cabin Lighting System for Electrical Dept. using microcontroller / PLC. During daytime it has been observed that some of the Corridor/ Class rooms/Laboratory/Staff Cabin lighting systems are running unnecessarily and consumes energy. It is possible to switch off the lights automatically which would result in saving of energy.
PB13	User friendly smart Driver assistance	Operate through gestures and movement through which Smart Phone connected automatically while Driver is Busy and Reply by Just Speaking without touching or typing.

PB14	Design and Simulation of Passive/Active Filter to Mitigate Harmonic in Power System	Electricity becomes one of the most important necessities for industry and domestic application. Power electronic devices find tremendous applications in industry as well as in domestic appliances. The excessive use of these devices causes major problems in the power system due to generate the harmonics. These harmonics pollute the power system and produce many adverse effect like malfunction of sensitive equipment, reduced power factor, overloading of capacitor, flickering lights, overheated equipment's, reduced system capacity etc.
PB15	Economical Design of Street light DC grid for energy savings at BVM Engineering College	Street lights are the important load in the premises of any industrial or commercial areas. Lot of solar street lights are available, but due to solar radiations problem it is not possible to install solar street lights everywhere.
PB16	Automatic gardening system in college.	Our college is spending a lot of money on a regular basis for the maintenances of the college lawn and garden but all the efforts are in vain. Which causes for a lot wastage of water, money, time and man power. And we as a student of BVM wants to solve this problem of our college and hence we developed the under said idea for the solution of fore said problem.
PB17	Virtual switches for classroom	In our college, there is problem of switch boards, either they are too high or the switches are not in working condition which causes for the creation of problem for the students. And if new switches are provided then they due to continuous usage they wear out or get damaged again.
PB18	Project Monitoring System	Paper based Registration (team and guide). Request send to guide for approval of team is not done properly. PPR (Periodic Progress report should be generated) not manage. PSAR (Patent Search and Analysis Report) not manage. Final Certificate generated after everything is properly done by student
PB19	Online fees payment (Web application)	Students are facing problem to manage fee receipt. There can be chances of losing of pay cheque or cash.
PB20	Stair climbing trolley for heavy loads.	In the modern world though there are many developments in the field of engineering. Still there are difficulties to carry heavy loads over stairs. Development of lift simplifies the effort of carrying heavy loads over stairs, it is not possible to use lift in all places like schools, college's constructional areas. This problem aims at developing a mechanism for easy transportation of heavy loads over stairs.
PB21	Surface finish improvement in EDM	Electrical discharge machining (EDM) is material removal process by a series of rapid recurring electrical discharges between the cutting tool (electrode) and the work piece in the presence of dielectric fluid. Productivity improvement is challenging task for industries. To achieve higher productivity during machining of hard materials higher range process parameters leads to poor finish of the products. Maximum material removal rate leading high productivity with less surface roughness needs optimization of process parameters and investigation of newer technologies. To have better economy of industries and low cost of products, optimum combination of process parameters and indigenous process technological strategies is needed.

PB22	Imagine a solution that incentivizes individuals to actively participate in community clean-up events through rewards and recognition.	Picture a solution designed to encourage active participation in community clean-up events by offering rewards and recognition to individuals. This innovative approach involves creating a platform where community members can log their participation in clean-up initiatives. Users earn points or tokens for their contributions, which can be redeemed for various rewards such as discounts at local businesses, eco-friendly products, or even recognition certificates. The platform could feature leaderboards showcasing top contributors, fostering friendly competition and motivating more people to join. Additionally, local businesses and sponsors could contribute to the reward pool, strengthening community collaboration. This solution not only promotes environmental stewardship but also builds a sense of community pride and engagement through tangible incentives and acknowledgment for individuals committed to making a positive impact on their surroundings.
PB23	Develop a concept for an app that utilizes artificial intelligence to suggest personalized mental health activities for users.	The challenge is to create the concet for an app leveraging artificial intelligence to offer personalized mental health activities. Users begin with a quick assessment, allowing the app to understand their emotional state and preferences. Using machine learning, MindGuide refines suggestions over time, recommending activities like mindfulness exercises or personalized content based on user responses. It integrates with wearables for real-time insights, adapting recommendations accordingly. By fostering a sense of community, encouraging goal-setting, and providing tailored support, MindGuide aims to make mental health activities accessible, engaging, and effective, ultimately empowering users on their well-being journey. This app serves as a personalized mental health companion, helping users proactively manage their mental health and enhance their overall well-being.
PB24	Optimizing Doctor Availability and Appointment Allocation in Hospitals through Digital Technology and Al Integration.	To develop a digital system that streamlines the appointment scheduling process in hospitals by automating the process of identifying doctor availability and appointment slot allocation. The system will utilize advanced technologies such as RFID, face detection, proximity of Mobile phone, or any other relevant technology to detect the presence of doctors in the hospital. The system will use Artificial Intelligence (AI) to allocate appointment slots based on the doctor's presence and the number of waitlisted patients. This will improve the overall patient experience by reducing the wait time. In conclusion, the proposed digital system will improve the efficiency and convenience of the appointment scheduling process in hospitals; the patients will benefit with reduced waiting time.

PB25	Real-Time Vehicle Tracking system.	To develop a smart transportation system, which that aims to provide real-time information to the users regarding the availability of buses and their upcoming timings. The system will utilize advanced technologies such as GPS and other relevant services to gather the necessary data for providing reliable information to the users. The proposed system will have to be designed to facilitate the users in identifying the current location of their desired bus, along with the estimated time of its arrival at the respective bus stop. This will be achieved through the integration of the real-time data from the buses, as well as from the traffic management system. In conclusion, the proposed smart transportation system will significantly enhance the efficiency and convenience of the public transportation system in Himachal Pradesh. As a sustainability information to the user, good to indicate emission compliance of the bus e.g. Bharat Stage IV; also if the bus uses clean fuel such as CNG or Electricity
PB26	Analysis and identification of malicious mobile applications	In today's world, using different mobile applications for specific tasks is very common. This leads to smart phone users accumulating too many applications over a period. Seldom do users delete unused applications. Any application performing malicious tasks can very easily go unnoticed. So, there is a need to develop a mobile app tool that can use open-source intelligence and threat feeds to detect various indicators of compromise in the smartphones. The tool can check network communication to various IP addresses that are suspicious, various URLs that are suspicious, inbound connections or packets from applications that are suspicious.
PB27	Intelligent chatbot to answer queries pertaining to various Maintenance Processes within Substation	Substation Asset Maintenance includes various maintenance activities for various equipment classes such as Transformer, Reactors, Circuit Breaker, Instrument Transformers, Surge Arrestors etc. Maintenance activity for all these equipments include carrying out various tests and checks for which procedures along with acceptable limits are documented. Need is for creating an intelligent chatbot based on natural language processing which may aid in answering user queries pertaining to various maintenance activities. Examples of such queries include steps to carry out a test, its probable values/ acceptable limits, actions to resolve any issue faced during maintenance. The chatbot should have features for semantic processing of queries. It should also includes industrial standards and safety guidelines and test equipment to follow that activity.

PB28	Vegetation measurement along the line corridor using satellite imagery	Solution is required for identifliing vegetation height below the Transmission conductor and raising alarm for lopping them. For this satellite imagery-based analysis is required along with trained machine learning model to simulate growth pattern. The growth pattern of different trees is different. The solution should be able to show the current height after adding the predicted increase in height (from the date of capturing to till date) to the height derived from satellite imagery.
PB29	Segregating and information on regulatory / Gofi. PolicieVGuidelines/Office Memorauda etc. related to Contract and Procurement issues for proper compliance and reporting of the same.	For adhering to compliance of various procurement and contract management related Regulations/ Policies/ Guidelines /Circulars/ Manuals/ Office Memorandums etc. issued by Govt. of India/ MoF/ MoP/ CVC from time to time for system improvement in the procurement process, such regulations / policies/ Guidelines/ Circulars etc. may require to be put in one place for information, reference, compliance / reporting of the same by the procuring authorities in the required manner like whether adopted in the tender document/ reporting thereof to the concerned made, wherever necessary through creation of a tool/ application /system for effective contract management. The GUI should be user friendly and the documents should be easily accesible.
PB30	Creation of Live Digital Twins for the power Projects and integration with all existing monitoring and database system which will give a holistic real time approach to the project and plant from all aspect of construction, operation and maintenance.	The comprehensive model should be able to feed-in real time data input and give the necesaary output parameters. For example for a Hydro Project , the inflow input of water in the river should be able to give the real time data ouput such as Energy output, Spilling(if any), Head loss, etc. .It would be a similar dynamic digital replica/mimicry of the real project.
PB31	Robotics for inspection of abrasion / corrosion of underwater equipment / parts and further repair and maintainance	Remotely Operated Vehicle (ROV)/Autonomous Underwater Vehicle (AUV) should be able to identify and repair the localised problems of the underwater portion of the structures like , Penstock , Dam, Turbine , Surgeshaft etc in a Hydro Power Project /Station without intervention of Human Deep Divers. It should preferabbly be indigneous and low cost in nature.
PB32	Geo tagging of plantation in the catchment area of hydro project	The idea is to create a system that would keep a track on growth rate and existence of the plantation in the CAT (Catchment Area Treatment) area. It would also check illegal forest activities.
PB33	Cloudburst prediction system	analyzing meteorological parameters and weather patterns can provide valuable information for predicting the possibility of cloudbursts. Local meteorological agencies and weather forecasting organizations.

PB34	One-stop solution for monitoring dairy plant energy consumption, hygiene and packaging waste collection from consumers.	To provide a sustainable solution with regards to dairy plant operation and performance, the monitoring of plant's energy demand per unit of produce would be an essential parameter. Monitoring of plant hygiene and sanitation would play a key role through the perspective of improvements in food safety. On the consumer end of dairy product value chain, the efficient and easy mechanism for collection of packaging waste is very important aspect. It is the need of the time to have one-stop solution which would address the above mentioned aspects reliably with an integrated approach. Solution may be developed preferably based upon software integrated with associated hardware.
PB35	development of systems for effective Environmental, Social and Governance (ESG) Intervention in Higher Education	It is well established that development towards a more sustainable society must begin with education. When education is done right, it not only teaches people about the science of climate change and inequality and the reasons we must take action, it also engages, empowers and promotes a more environmentally friendly, community-based way of life. ESG in higher education is one of least discussed aspects of governance among administrators. With the recent energy and climate crisis, administrators around the globe have realized the importance of sustainable process. The three pillars of ESG are people, processes, and product. In our case, people are the most important stakeholder in achieving our goal. Students from campuses of Higher Education are not only woke about the climate-energy crises but also are passionate for deigning a world of their future. Administrators on other hand are aware of the rising cost of energy and are open to adopting energy conservation and other aspects of ESG The objective of the problem statement solution shall be to create a common platform for planning, development, execution, and monitoring of ESG initiative. The initiatives may include adopting alternative sources of energy, development of energy efficient campuses, adopting green construction standards like GRIHA Prakriti and similar such initiatives. Another objective of the problem statement solution is to generate and produce dynamic dashboards which show targeted lacking areas as well as progress check for currently undertaken projects. The overall objective of the solution should be based on a collaborative effort between all the stakeholder for creating ESG framework in Higher Education. If executed effectively the solution will not only make a significance difference to the present scenario but also create a generation of environmentally and socially aware citizens with in depth knowledge on ESG issues. The solution should be in line with India's ambition of achieving its targets under COP 21 of Paris Agreement. It should also incorporate the best practice steps taken by governments like the International Solar Alliance. The overall objective of the solution shall be to develop a common monitoring dashboard for all ESG Initiatives taken by the state and predictive solution based on best practices across the globe.

PB36	Community Based Reporting and Monitoring Tool for Women's Safety in Colleges/Universities.	Campuses of colleges and universities are meant to be vibrant, free-flowing, and dynamic in nature. An accommodating campus supports idea exchange, personal growth, and soft skill development. The safety of students, especially women's students, is a pillar of an accommodating campus. In the present scenario, the measures available to college administrators and students, such as the installation of CCTV cameras, increased security on campuses, and the establishment of police outposts, are reactive in nature, i. e., they are pressed into action only after the occurrence of a mishap. The objective of the problem statement is to develop predictive analytic models to prevent mishaps even before they occur. The second issue pertaining to women's safety is the lack of manpower for proactive interventions to prevent mishaps. Another objective is to develop, monitor, predict, and provide actionable intelligence for the prevention of mishaps. The solution can explore the contours of anonymous and non-anonymous data collection mechanisms, point-to-point reporting systems, and predictive data analytics for providing actionable intelligence. Further, the collected data can be leveraged to develop and mark probable black spots and red time zones for pin-pointed actions to be taken by administrators. To promote a community-based system, the system may be designed in such a way that it not only gathers information from students but also involves the entire student community in the prevention of mishaps. The data collected from the participants can be populated into the system, and real-time monitoring can be done with an interactive dashboard and charts. It can also be used to develop real-time rapid intervention by the student community, college administration, and local authorities. Further to this, a companion model can also be developed for students that helps them travel through black spots and during red time zones. This will not only ensure the community participation of students but also develop a responsibility-sharing framework for campus safety.

PB37	Real time monitoring of infrastructure development	Today, each sector, such as education, health, agriculture, etc., is growing at a fast pace, and so is the infrastructure required for each sector. Developing infrastructure for each sector is a huge task and involves huge costs. Currently, a few tools are being used to monitor the day-to-day progress of the infrastructure, but they are all manual. This results in additional costs and the untimely completion of the infrastructural projects; thus, it affects the overall development of any sector. For further clarification, consider the infrastructure development associated with the education sector. If any government wants to set up a technical institute, it has to go through multiple processes, and one of the major processes is the timely establishment of the institute. With geo-tagging, it is possible to identify the chunk of land within the given location, district, town, etc., but the major challenge lies when it comes to the development of infrastructure. Currently, there is no mechanism available to monitor the progress on a real-time basis, so lots of manual intervention happens to monitor the progress. To overcome this issue, it is necessary to develop GIS and Al-based solutions through which real-time monitoring of the infrastructure can be done. Further, an application can also be developed that can work in both online and offline mode and through which day-to-day progress can be fed into the system. Thus, collected data can be populated into the system, and real-time monitoring using interactive dashboards and charts is possible. Further, the system will also provide flexibility to the user through simulation interference, which will help the user analyze the impact of an external factor on the time required for completion of the project.
PB38	Online integrated platform for projects taken up by the students of various universities/colleges	Innovation is the key to betterment of education and students in the Indian universities/colleges put a lot of efforts on the projects as a part of the academic requirements. If a common knowledge platform (with a facility for plagiarism) is created to bring all project works taken up at various levels by the students in Technical / Higher Educational Institutes and Universities throughout the country, then it will be a great source of knowledge and also will help the student community to take up unique/innovative project works Summary: An integrated platform should be developed where in all the universities/Colleges provide information about the projects done by the students. The information on this platform will help in the peer learning and this will also help in cross functional research between various universities/colleges. Objective: To develop an online integrated platform for projects taken up by the students of various universities/colleges.

PB39	Despite prohibition of hazardous cleaning of sewers and septic tanks (manual cleaningof sewers and septic tanks without safety kits, safety devices and without adherence tosafety precautions) it is still being resorted to in many parts of the country.	Despite prohibition of hazardous cleaning of sewers and septic tanks (manual cleaning of sewers and septic tanks without safety kits, safety devices and without adherence tosafety precautions) it is still being resorted to in many parts of the country. As a result,the reports of death of workers while cleaning sewers and septic tanks are still being highlighted by media. Presence of gases like hydrogen supplied, ammonia, methane, carbon monoxide and Sulphur dioxide in sewers and septic tanks, beyond certain limits, make the atmosphere in the sewers and septic tanks, hazardous, resulting in fatal accidents. Cleaning of sewers and septic tanks can still be risky even with the use of PPE Kit, Safety devices. Solution: At present, there are gas monitors of various kinds, which are available. There is a need of a device which can monitor the availability of these gases while a worker is on the job of cleaning, so that the persons/supervisor available outside the sewer/septic tank can get alarm/notification that the atmosphere in the sewer/septic tank is not suitable for entry/working in a sewer or septic tank. This device can save the lives of many people working in sewers and septic cleaning operations.
PB40	To develop a technical solution for enabling Institution level verification of students of one State studying in other State/s, who are at present generally denied benefits under the Scholarship scheme as the Institutions in which they are studying are not registered on the portal/s of their home State.	To develop a technical solution for enabling Institution level verification of students of one State studying in other State/s, who are at present generally denied benefits under the Scholarship scheme as the Institutions in which they are studying are not registered on the portal/s of their home State.
PB41	Centralised Nasha Mukti Database	Details of counselling and De-Addiction interventions provided to the beneficiaries at facilities supported by MoSJE is not available on a single platform, which could help in analysis of patient-wise, center- wise or State- wise details of services provided, beneficiaries reachedand other relevant details.
PB42	Online Blockchain based certificate generation and validation system for government organization.	Currently large no of training programs is organized, and certificates are provided. There is no mechanism to validate digital certificate. so create a system in which custom digital certificate generate. User can store certificate in digital locker system other organization will validate certificate. Use opensource software and blockchain technology. Expected Output: Blockchain Based Certificate generation and validation Certificate can be added in Digital Loker System Users: Government Office, Student, Industry, Institutes

PB43	Fake Social Media Profile detection and reporting	The social life of everyone has become associated with the online social net works. These sites have made a drastic change in the way we pursue our social life. Making friends and keeping in contact with them and their updates has become easier. But with their rapid growth, many problems like fake profiles, online impersonation have also grown. Fake profiles often spam legitimate users, posting inappropriate or illegal content. Several signs can help you spot a social media fake who might be trying to scam your business. Identifying fake social media profiles and taking corrective measures. Expected Output: An Application software that detects the fake social media profile Users: Crime branch and other investigative agencies
PB44	Self-identifying the mental health status and get guidance for support.	Considering the increasing burden of the mental disorders (as evidenced in National Mental Health Survey-2016), it is important to identify the people at the risk of developing mental disorder at early stage to take the necessary action. Primary Health Care centre is a gate-keeper of the Indian public health care delivery system and also an opportunity to screen patient for the risk of developing mental disorders. There are some validated tools are available for screen of the person for risk of developing psychiatric disorders, however, ready availability, taking response from patients, interpretation and quick guide for taking action based on the interpretation of the tool score is still challenge for effective and efficient utilization of the screening tool. Expected Output: Mobile application for screening of mental health. Users: Public as well as Frontline Health worker.
PB45	Student dropout analysis for school education	Right to education is key concern for government and at school level; drop out ratio is high due to poverty and social, economic reasons. If government have drop out student analysis on following different categories, it will be very useful in framing different policies. 1. School wise 2. Area wise 3. Gender wise 4. Caste wise 5. Age/standard wise Expected Output: Focused interventions on the high dropout rates
PB46	Development of Small Scale Wind energy device	Urban landscape and the physical challenges restrict the erection of small-scale wind turbines. Large-scale turbines fared well compared to small-scale wind turbine models. Other general challenges are as under: (1) Highly controlled energy sector (2) lack of awareness and information (3) restricted access to technology (4) lack of competition (5) high transaction costs (6) poor market infrastructure (7) High investment requirements Expected Output: Eco-friendly energy alternative, Unlike energy produced by fossil fuels while wind energy is completely clean and eco-friendly. Not only is wind power free to harness, but its also 100% renewable.

PB47	Price comparison of GeM products with other e-marketplaces	The problem at hand involves developing a cost or price comparison solution specifically tailored for comparing the prices of products available on GeM (Government e-Marketplace) with other e-marketplaces or e-commerce platforms. GeM is a dedicated online platform in India that facilitates the procurement of goods and services by various government departments, organizations, and public sector undertakings. Comparing the prices of products listed on GeM with those on other platforms is crucial for ensuring fair and competitive pricing. The cost or price comparison solution aims to provide users with a convenient way to compare the prices of products available on GeM with other popular e-marketplaces or e-commerce platforms. By leveraging data scraping techniques, APIs, and data analytics, the solution will gather and analyze pricing information from multiple sources, allowing users to make informed decisions based on the best available options.
PB48	Contact center knowledge management tool with decision tree	The problem at hand involves developing a knowledge management tool specifically designed for contact centers, aiming to streamline customer support and enhance the efficiency of agents through the implementation of a decision tree framework. Contact centers handle a vast amount of customer inquiries, and providing accurate and consistent responses is crucial for delivering high-quality customer service. The knowledge management tool with a decision tree is designed to assist contact center agents in accessing relevant information quickly and making informed decisions when interacting with customers. It leverages a decision tree structure, which is a hierarchical model that guides agents through a series of questions and steps to determine the appropriate response for a given customer query or issue.
PB49	Image correctness for a product on marketplace	This problem involves developing an image correctness analysis solution specifically tailored for assessing the accuracy and quality of product images on marketplace and e-commerce platforms. With the increasing reliance on visual content in online shopping, ensuring the correctness and authenticity of product images has become crucial for building trust and facilitating informed purchasing decisions. Image correctness analysis refers to the process of automatically evaluating and verifying the accuracy, completeness, and relevance of product images displayed on online marketplaces and e-commerce platforms. It aims to detect potential issues such as misleading images, incorrect representations, altered visuals, or mismatched product details.

PB50	Sentiment analysis of Social Media presence	This problem involves developing a sentiment analysis solution specifically designed for analyzing the sentiment expressed in the social media presence of individuals and organizations. With the significant impact of social media on personal and organizational reputation, understanding the sentiment of social media posts, comments, and interactions has become essential for individuals and businesses alike. Sentiment analysis refers to the process of automatically determining the sentiment or emotional tone conveyed by text or speech. In the context of social media, sentiment analysis can provide valuable insights into public perception, customer feedback, and brand reputation. By analyzing the sentiments expressed in social media content, individuals and organizations can gauge the overall sentiment trends, identify potential issues, and take appropriate actions to maintain or enhance their online presence.
PB51	Sentiment Analysis of Incoming calls on helpdesk	The problem at hand involves developing a sentiment analysis solution specifically tailored for analyzing the sentiment of incoming calls in helpdesks, call centers, and customer services. With the ever-increasing volume of customer interactions in these domains, it is crucial for businesses to gain insights into the sentiments expressed by their customers during phone conversations. Sentiment analysis refers to the process of automatically determining the sentiment or emotional tone conveyed by a text or speech. In the context of incoming calls, sentiment analysis can provide valuable information about customer satisfaction, identify potential issues, and highlight areas for improvement in customer service delivery.

PB52	Using existing CCTV network for crowd management, crime prevention, and work monitoring using AIiML	The Indian Railways is one of the largest railway networks in the world, serving millions of passengers daily. However, with the increasing number of passengers and trains, the management of railway stations and trains has become a challenge, especially when it comes to crowd management, cleanliness, crime prevention, and work monitoring. The traditional methods of manual monitoring and surveillance are time- consuming, and human error can lead to missed incidents. The integration of AI and ML technology can help the Indian Railways to overcome these challenges. Al-based CCTV networks can analyze large amounts of data in real-time and provide insights into crowd management, crime prevention, and work monitoring. This can improve the safety and security of passengers, as well as the efficiency of railway operations. For example, AI algorithms can detect unusual behavior and alert security personnel, while ML algorithms can predict crowd patterns and help with resource allocation. However, implementing Al-based GCTV networks requires a significant investment in technology and infrastructure, as well as the development of data management systems that can handle the large amount of data generated by these systems. Additionally, privacy and ethical considerations must be taken into account to ensure that the use ofAI technology does not infringe on the rights ofpassengers or workers. In conclusion, the use of AI and ML technology in the analysis of existing ccrv networks of the Indian Railways can bring about significant benefits for crowd management, crime prevention, and work monitoring. However, careful planning and implementation are required to ensure that these benefits are realized while respecting the privacy and ethical concerns ofstakeholders
PB53	Natural language translation engine for announcements and information dissemination at stations	Design ofa system to provide information in a desired Indian language on demand by passengers and other customers, in written and oral form. The system should be extendable to foreign languages for tourists as and when required. Limited vocabulary systems for commonly required railway information services are acceptable. Scope ofthe system - announcements at stations, information over IVRS, information through chatbots and web interfaces. constraints to be considered - voice recognition in different languages; noisy ambience at stations; adequate computing power for on-the-fly content generation; delivery on mobile devices.

PB54	A software that suggests drugs and formulations for a disease/pharmacological property based on the Ayurvedic classical books/Repositories.	Ayurveda has a large database of single herbs, minerals, and formulations that have been tailormade to suit each individual, his/her psychosomatic constitution, clinical condition, comorbidities, age, region, etc. These data are spread over more than 150 texts, amidst manuscripts in multiple languages and scripts. With the rise of transcriptional and translational facilities, several traditional medicinal texts are now available in their digitized forms. But for an Ayurvedic student or practitioner, exploring this multitude of literature for identifying their ""drug of choice' often becomes tedious and impractical. Here is the need of a custom software that can identify the apt formulation that has been designed to treat a constellation of symptoms and present it to the student/practitioner along with its reference and other desired properties. For example, the two formulations Punarnavadi Kashaya and Vyaghryadi Kashaya are mentioned in texts as follows: Both these are decoctions advised in Jvara (fever) and Kasa (cough). But in a patient with upper respiratory tract infections like common cold (Pinasa), Vyaghryadi would suit better than Punarnavadi. Whereas in a condition associated with inflammatory changes all over the body. I Punarnavadi would be the appropriate choice. The objective of the proposed software is to identify the single drugs and formulations that suit a set of symptoms. Certain ingredients (eg. jaggery) are unsuitable for certain categories of patients (e.g. diabetics). There are also medicine mediums that are unsuitable for specific diseases (e.g. fermented/alcoholic preparations in diabetes). Such information is also expected to be conveyed to the learner or practitioner who uses the software. The same disease has been mentioned in different names (E.g. Jvara and Santapa for fever) and the same word has been used to denote different (Eg. Abhaya generally means Terminalia chebula but in the context of Jatyadi ghrita, it means Vetiveria zizanioides. The multiple names of same diseases are expected to be included in the tags of each formulation. The sources for the formulations, and synonyms and similar words have been included in the data section. It is also desirable to include the Ayurvedic pharmacological properties of the single drugs, and the compound formulation (called Rasa, Guna, Virya, Vipaka, etc.) as and where available.

PB55	Chatbot to Known Individual Prakriti (Phenotype)	Ayurveda is a natural health care system that emphasizes the treatment of disease in a highly individualized manner as it believes that every individual is unique having a different constitution. It classifies all individuals into different 'Prakruti' types based on the theory of tridosha and each type has a varying degree of predisposition to different diseases. This is independent of racial, ethnic, or geographical considerations. Knowing which particular Prakruti one belongs to, enables them to decide the preference of food which suits them best. By following the rules and regulations regarding food and lifestyle, one can prevent themselves from getting inflicted with various diseases. But, Prakruti assessment is a tedious process that requires the individual to visit the physician followed by a long list of questions in order to reach a conclusion. In order to make this process more convenient, the development of a self- assessment tool with the help of artificial intelligence may prove to be a stepping stone. A Chatbot which has pre-recorded questionnaire may help in the Prakruti assessment depending upon the responses given by an individual.
PB56	Startup-AYUSH Portal	The key objective of the Startup AYUSH portal is to be a one-stop platform for all stakeholders (Startups, Investors, Incubators, Accelerators, Government Agencies, and Public Users) in the AYUSH system to interact and collaborate in a highly dynamic environment. The portal is directed to provide a collaborative platform for all the stakeholders of the AYUSH startups to have an interactive engagement to enhance and bolster the network. It will bring together the entire AYUSH Startup community at the global level through virtual connections, mentorship, and showcase opportunities. It will have a plethora of resources and information guides to propel everyone in their entrepreneurial journey.
PB57	Al-based tool for preliminary diagnosis of Dermatological manifestations	The Global Burden of Disease project has shown that skin diseases continue to be the 4th leading cause of nonfatal disease burden worldwide. These conditions are often the presenting face of more severe systemic illnesses, including HIV and neglected tropical diseases (NTD). such as elephantiasis and other lymphedema-causing diseases. Additionally, skin disorders pose a significant threat to patients' well-being, mental health, ability to function, and social participation. However, it is very difficult to provide better dermatological care to under-served or resource-poor regions in a cost-effective manner owing to unavailability of efficient diagnostic tools, lack of connectivity, and poor laboratory infrastructure etc. Moreover, there is also a scarcity of physicians with dermatological training. Even, preliminary screening of a dermatological manifestation seems to be an arduous task. Thus, developing an Artificial intelligence-based tool (through Image processing technique) for preliminary diagnosis of numerous dermatological conditions will prove to be a boon in the health care system.

PB58	Identification of Different Medicinal Plants/Raw materials through Image Processing Using Machine Learning Algorithms	ndia, with a rich heritage of floral diversity, is well-known for its medicinal plant wealth, but their identification is one of the major burning issues in Ayurvedic Pharmaceutics. Several crude drugs are being sold under the same name in the market leading to confusion and their misidentification. Even the collectors and traders are not completely aware of the exact morphological appearance or differentiating attributes of the many drugs owing to seasonal and geographical availability, and similar characteristics. Moreover, the extensive consumption to meet demand-supply ratio exerts a heavy strain on the existing resources. It further leads to the practice of adulteration, substitution, and disbelief in the curative capability of the system eventually. Thus, software capable of identifying different medicinal plants/ raw materials through Image Processing Using Different Machine Learning Algorithms will be of immense use. It will be helpful at every level viz. wholesaler, distributor, etc. of the supply chain of raw material being utilized in the system.
PB59	Development of a prototype instrument (sensor based) for assessment and quantification of rasas (taste) in crude herbs.	Every herb used in the Ayurveda possesses some Taste (Rasa) and most important of them are -Madhura (Sweet). Amla (Sour), Katu (Pungent), Tikta (Bitter), Kashaya (Astringent). The rational application of herb in management of various diseases also depends on selection of herbs as per their rasa (Taste) as rasa (Taste) has the potential to effect the physiology of human body. Further, the same principle also applied for dietary items for their use in health management In fact, management of physiological units Vata, Pitta or Kapha (Body humors) may also be done on rational application of dravyastmaterials of dietary and medicinal value) based on rasa (taste). However, it is simple to identify rasa (taste) through tongue but it is not possible to quantify Further, the potency of herbs also depends on its rasa. Thus, quantification of rasa (taste) in crude herbs is also needed for quality assessment of crude herbs. Solution Need to develop an instrument (Tongucometer) which can quantify the Taste (rasa)-(Madhura (Sweet), Amla (Sour), Katu (Pungent), Tikta (Bitter), Kashaya (Astringent)) present in the materials used as diets and medicine through a sensor-based instrument?""

PB60	PG dissertation Management System Description.	PG dissertation is the partial requirement for the fulfillment of Pg degree. During 1st year of post graduation, student select PG dissertation topic and carry out research under supervision of PG guide and submit dissertation during final year of evaluation. The following are the major steps of the dissertation: Selection of topics: 1. As per the thrust ideas of research of a particular department. 2. Maintaining student guide ratio. 3. To avoid duplication. Approvals and ethical issues. Monitoring research progress. Evaluation of dissertation. Publication if any, out of dissertation research. Maintenance of database of all dissertations under various categories with search option. With holding of university final year results in case of disapproval of PG dissertation. Managing and monitoring all the above aspects throughout the country maybe a herculean task. An application to ease the process and improve the quality of research is essential.
PB61	Application for Assessment of Quality of Textbook/ Reference Books/ E- Book	The medical students aiming to be good physicians, need to select a standard medical textbook. It is evident that there are several books made available in ASU (Ayurveda, Unani, Siddha) medical systems and every book claims that the book has been written as per CCIM or NCISM syllabus. Amongst some are good and some are of poor quality and were written with vested interest. Due to this, students are trapped by substandard books that leads to poor quality standard among students. Identifying this issue and its impact on medical on the medical system, NCISM constituted an expert committee for the development of an assessment scale for textbooks/ reference books. The expert committee after thorough deliberations developed the assessment scale for the quality assessment of textbooks/ reference books. This assessment scale serves the purpose of:- ÃƒÂ¢Ã¢â€šÂ¬Ã‚Â¢Selection of quality textbooks by teachers for their students. Serving as a reference for textbook writers. ÃƒÂ¢Ã¢â€šÂ¬Ã‚Â¢ Providing criteria to recommend for inclusion in the list of recommended apex/ regulatory bodies. The assessment process requires a review of the books by reviewers (subject-wise reviewers located across the country, 3 reviewers per book) and summarizing the reviewer's remarks and decision by the committee. The development of an application on this will help to get reviews from people around the world online and also will help to summarize all the reviewed data in a faster mode.

PB62	Automation of drill core rock sample lithology logging.	The lithology of drilled core samples in exploration is usually identified on the basis of grain size, color, cementing material, mixing of grains of different sizes (sorting), packing and compactness of grains roundness of grains. The Luster and specific gravity of the sample also play a crucial role in the identification of core rock samples with respect to dimensions. The geological discontinuities are identified on the basis of fractures, joints, and litho-contacts. Hence, the development of a device assembly, that scans the drill core rock sample and identity the lithology and geological discontinuities on the basis of above said parameters by the artificial intelligence with given standards.
PB63	Unpredictable failure of poly pulleys along cable belt conveyor system for pulley changing	There are more than 18,000 nos. of poly pulleys along the conveyor length which undergo wear and tear and need replacements including emergency replacements stopping the conveyor system. Solution Desired: Based on past data and the use of suitable ML software, the pulley failures with its locations can be predicted which would help in avoiding sudden stoppages of the conveyor.
PB64	unpredictable wear and tear of cable belt conveyor Rope and belt leading to frequent stoppage of single line Mine production system causing significant loss of production	The 14.6 km long cable belt conveyor is supported on pulleys. A steel rope runs over these pulleys while the belt sits over them. The conveyor is operated by pulling the steel ropes with a drive motor. The rope gets elongated due to pulling force leading to breakage of its strands. Similarly, the belt also gets worn out causing stoppage of conveyor operation unpredictably. Solution Desired: By capturing the past reasons for wear and tear including visuals and using a suitable ML application, try to predict the condition of the Rope and belt well in advance such that corrective and preventive actions can be taken before its failure preventing loss of production.

PB65	Mines operation specially haulage of dumphers done through operators extended even in the absense in adequacy of operators.	Description: In case of Force majeure situations like road blockades/strikes by locals, all haulage operations are halted. Also sometimes due to the absence of operators, the quantum of excavation/haulage has to be reduced commensurate to the available workforce. Solution Desired: If there would have been autonomous/automated haulage systems allowing programmable operation of dumpers within OEM operating parameters, without an operator sitting inside the cabin, then the issues could be taken care of. This would further: ÃƒÆ'Ã‚Â¼ Reduce/eliminate the need to stop equipment for breaks and shift changes, which increases the utilization of each vehicle. ÃƒÆ'Ã‚Â¼ By better tracking and controlling vehicle operations within OEM prescribed limits, asset life can be extended, including areas such as tires, brakes, and other components. ÃƒÆ'Ã‚Â¼ The systems having control from a remote control/command center will enable controlling and managing vehicle operations in a consistent manner thereby leading to a significant reduction in labor, fuel, and maintenance costs. In the absence of completely autonomous/automated haulage systems, teleoperated vehicles could be used enabling automatic steering along a pre-set path. ÃƒÆ'Ã‚Â¼ Drivable areas within the mine are converted into a map for the systems. ÃƒÆ'Ã‚Â¼ Here an operator may control acceleration and braking while the Tele-operating system automatically controls steering. Similar to a train on a railroad track, controlled vehicles can drive on their precise path, minimizing the reliance on high-resolution video and operator skills for safe operation and also preventing the operators from driving in unsafe and prohibited areas.
PB66	Dificulty in operating Heavy earth moving machineries during rainy season (4-5 months due to extremely poor visibility conditions leading to significant loss of excavation and production	The Mine is located on a hill top over an altitude of avg. 1250m above MSL, suffers significant loss of excavation and production during 4-5 months of rainy seasons due to extremely poor visibility condition caused by stagnated dark clouds on the hilltop. It becomes very unsafe to operate Loaders and Dumpers resulting in huge loss of excavation and production. Solution Desired: Loaders and Dumper operations should be guided in such a way that Mine excavation and production processes are carried out safely. The solution may lie in using suitable AI-ML applications based on GPS technology, real-time monitoring of weather conditions, and providing fog-piercing lights coupled with proximity sensors to avoid equipment collisions. The solution should be effective enough to operate mining machineries safely to meet the targets.

		Background: The majority of individuals with intellectual disability, hearing impairment, cerebral palsy, chronic neurological condition, and speech and language disability present with speech sound disorders characterized by unintelligible speech. These errors may reflect a lack of motor skills to produce a sound, a lack of linguistic knowledge, or deficiencies in both. The Intervention approaches must focus on one or a combination of both skills. Hindi, the national language of India is spoken by over 1 million people, and 43% of the Indian population. Though several training resources are available in English, the resources in Indian languages are limited. A training resource manual titled ÃƒÂ¢Ã¢â€šÂ¬Ã‹Å“Phonics and phonological processing to Develop Literacy and Articulation-Preliteracy and Articulation drill bookÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢ contains the sounds of Hindi in isolation and in different words across all word positions. The same can be used to develop software for training individuals in perception and production intervention. Given that the majority of the Indian population is in the rural regions and human resources are in the urban regions, this software can help bridge the gap and serve the un-served population. The software can be used to give visual and auditory stimulation and feedback and can help track progress. The training can be more intense with short frequent sessions, and flexible timings. Ãƒâ€šÃ‚· Detailed description: Motor-based Intervention generally includes perceptual and production training and both can be incorporated into the same software. Perceptual training also called ear training involves teaching their clients to perceive the distinction between the target and error sounds. Through software, the child can be presented with a variety of correct and incorrect real-speech examples of the target phoneme and can be asked to make judgments about whether the production was correct. The software can also provide visual feedback about the accuracy of the childÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢s judgment. The software can also track the childÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢s success rate to assist the clinician in monitoring progress. Production of a target sound can be done using imitation, phonetic placement, successive approximation (shaping), and contextual utilization. All of these can be achieved using the software specifically developed for its use. For eg: Imitation: Several auditory models of the sound in isolation, syllables, or words can be provided. The child can be asked to watch and listen to the video that shows the 3- dimensional image of the sound /word being produced and then can be asked to repeat the same. The clientÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢s production can also be recorded for self-feedback. Phonetic Placement When the client is unable to imitate a target sound, cues or instructions regarding where to place his or her articulators can be provided. Use of camera to serve as a mirror, images showing the placement, and videos showing the placement and movement during articulation can be developed. The videos would be 3 dimensional and could involve sound in isolation and word level. Contextual utilization Involves isolating a target sound from a particular phonetic context in which a client may happen to produce a sound correctly, even though he or she typically produces the sound in error. Eg: The child can say ÃƒÂ¢Ã¢â€šÂ¬Ã‹Å“bright sunÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢, but

		Persons with disabilities in our country, despite the progress happening on accessibility, education, skills development, and employment, still face many challenges, especially in the employment phase of life that promotes inclusion in the family and society. Enhancing vocational training and employment prospects for people with disabilities is essential and there are efforts happening at the National level that has to end up in employment that fetches significant economic benefits and dignified life for them. As per the recent survey by the Ministry of Statistics report on Persons with disabilities, about 64% of persons with disabilities in India are not into employment. The vulnerable group of the population with disabilities under the D andamp; E categories of 4% reservation in Government and PSU Jobs (Persons with disabilities of type, Intellectual Disability, Autism Spectrum Disorder, Multiple Disabilities, Mental Illness, and Specific Learning Disabilities) are either not aware of or not getting notifications regarding the employment vacancies, queries, or other such information due to the unavailability of access to print media, and online services like employment news. They do require a curated and accessible content with adaptations to specifically inform them of the job and details in a simple language with requirement information to apply, know the coaching facilities available and get trained to apply, appear for competitive examinations, get qualified and place themselves to achieve the 1% reservation allocated to them. In many scenarios, the parents of such adults are also not with much literacy, awareness about such job opportunities through their adult children are eligible for them. This results in many of the jobs though published not being applied, for or the right candidates getting a placement as per the reservation and implementation of the Rights of Persons with Disabilities, Act 2016. Detailed Description: Accessibility and inclusion of Persons with disabilities (PwDs) in the workforce remains a challenging one on a global scale and with much more diversity in our Country's context. There have been ongoing attempts and measures to ensure the inclusion of PwDs in the workforce especially in the Government and PSUs level by the Department and other agencies working for them. This includes the Job Coach programme, an introduction to job support services, with support for application, training for competitive examination in an accessible manner, guidance to the PSUs and Department for accessible conduct of competitive examinations, counselling, and logistic support for candidates to write / attend the examination and interview thereafter. Finally, on placement, support for workplace adaptations or reasonable accommodation to sustain the job. The Department of Empowerment of Persons with Disabilities (DEPwD), National Institutions like NIEPMD, collaborating with Government and Non-Governmental Organizations (NGOs) support with such job coach programme and assist Persons with Disabilities (PwDs) especially D andamp; E category, the most vulnerable group with either cognitive, learning, severe mobility, behaviour management, socialisation, or multiple such difficulties. Expected Solution: The software application intends to Ãƒâ€šÃ‚· Create a learning profile of the candidates (The learning profile includes persons information with UDID, literacy, skills training, address, functional difficulties faced (as per

PB69	Hot metal, Steel Ladle, and Scrap pot Tracking by auto-capturing the Ladle number and locations at SMS-1 and SMS-2.	The ladle is identified by the number painted manually on its outer surface. The ladle number has to be captured. The exact location and number of the ladle has to be tracked in real-time and feedback is to be given to the local server for display. The hot metal Ladle travels from the TLC pit area to the converter for charging liquid hot metal and back. Steel Ladle travels from the Ladle preparation bay with liquid steel to secondary metallurgy units i.e. LF-1, LF-2, RH, or Twin LF, and then to one of the Caster machines for casting into billets and back. Slag Pot travels from Converter to the Slag dumping area and back. Benefits of solving this issue are tracking of the ladles, timely changes in process based on the ladle history, calculation of ladle circulation times, ladle life, and ladle turnaround times.

		The Directorate of Publications Division (DPD) is a publication agency of the Government of India that is engaged in publishing books and journals in various languages and for varied sections of people. DPD provides a platform for buyers to purchase books and journals through its sales emporiums and various online platforms. Employment News (EN), now a part of DPD, is a journal that provides information on employment opportunities and is published in English, Hindi , and Urdu and is also available online on a subscription basis. The various online platforms present for purchasing DPD books/e-books/journals/e-journals are: S. No. Name of platform URL 1 Publication Division Website https://www.publicationsdivision.nic.in/ 2 Journals Website with archives https://www.publicationsdivision.nic.in/journals/ 3 Employment News Website (Hindi) http://www.employmentnews.gov.in/ 4 Employment News Website (English) http://www.employmentnews.gov.in/ 5 DPD Android app https://play.google.com/store/apps/details?id=com.iconmaandhl=en_INandgl=US 6 Employment News Portal (under development) 7 Amazon 8 Various Social Media Platforms like Facebook, Twitter and Instagram Twitter/Instagram: @DPD_India, Twitter: YojanaJournal, Employ_News Facebook: https://www.facebook.com/publicationsdivision/ 5 Despite being present on multiple online platforms the sales figures for the books and journals published by DPD over the years have not shown encouraging growth. While initiatives are being taken from editorial and design teams to improve the books and journals, a need was felt to encourage young students/ graduates to work on providing complete digital solutions and reworking a complete digital marking strategy for increasing online sales. By making use of various tools for digital marketing, the products of DPD may be available to the buyers seamlessly on various platforms. These may include email marketing, Content marketing, competitor analysis, Search Engine optimization, performance reporting, Social media and website analytics and the like. Details of DM Tools that may be used : The SEO may improve the chances of DPD websites figuring out among the top options for purchasing books in India and abroad related to the content published. Specific books on Gandhiji, PM, President, Rashtrapati Bhawan and even Mirza Galib, Lord Buddha, etc., published by DPD may also be available when users search for such books/ personalities. Moreover, DPD has a database of user details but presently there is no system of capturing such data for increasing sales and retaining customers. As such email marketing may be employed to retain one time or regular buyers by providing them targeted options for purchase as per their preferences. Alerts for new issues of a (preferred) journal may also be sent to them. Also, solution to capture new audience may also be worked out using email marketing. Next, DPD/EN are present on various social media platforms like Twitter, Instagram, Facebook etc. and various tools may be used to best make use of such social media platforms for increase sales and capturing new customers/buyers for which analytics, advertising, content marketing and other tools may be explored. If needed, any new platform that may be required from point of view of improving online sales may also be created. Objective : A push through various digital media tools is targeted at

PB71	Text to Video of various PIB Press Releases using Artificial Intelligence / Machine Learning / Generative Adversarial Networks in English and 13 Regional Languages viz. Hindi, Urdu, Punjabi, Gujarati, Marathi, Telugu, Kannada, Malayalam, Tamil, Odia, Bengali, Assamese and Manipuri.	Press Releases of the Press Information Bureau are in the form of text. The attention span of the user is reducing by the year, So to engage with the user in a meaningful way, the Press Releases need to be provided in a video format. Software should be designed in such a format to generate the videos automatically from the Press Releases published. The images and clips used for generating the video should be copyright free. There should be a provision to store a pool of images and clips for generating the video. The generated video should be vetted by the concerned PIB officer before publishing. Software should be designed in such a format to generate the videos automatically from the Press Releases published. The images and clips used for generating the video should be copyright-free and authentic sources. There should be a provision to store a pool of images and clips for generating the video. The generated video should be vetted by the concerned PIB officer before publishing. The software also includes a provision to send the notification to the concerned PIB officer for approval. After approval, the software should have the feature of auto-uploading on the concerned social media sites.

PB72	360-degree feedback software for the Government of India related News Stories in Regional Media using Artificial Intelligence / Machine Learning	The Press Information Bureau (PIB) is the nodal agency of the Government of India to disseminate information on government policies, programs, initiatives, and achievements to the print and electronic media. It functions as an interface between the Government and the media and provides feedback to the Government on peopleÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢s reactions as reflected in the media. Information is disseminated from Hqrs through Press Releases in English, Hindi, and Urdu and subsequently translated from PIB Regional offices into other Indian languages like Punjabi, Gujarati, Marathi, Telugu, Kannada, Malayalam, Tamil, Odia, Bengali, Assamese, and Manipuri, to reach out to about 8,400 newspapers and media organizations across the country. To provide effective and timely feedback to the Government, an automated feedback system for all the above regional languages using Artificial Intelligence / Machine Learning is required. The feedback system should crawl the select regional media sites (around 200 websites) for the news published in regional languages. The software should categorize the stories into the concerned departments as per the tags provided. The stories should be categorized as favorable (positive), neutral, or not favorable (negative) to the Government of India. Negative stories pertaining to a department should be notified to the concerned PIB officer on a real-time basis by SMS or Android notification or by other means. E-papers of select newspapers should be scanned by the system automatically using an Optical Character Recognition (OCR). The concerned news clippings if it pertains to the Government of India should be cut and electronically pasted in a pre-designed template mentioning the name of the newspaper, the page number where the story was published, the name of the edition, etc. These clippings should be classified into Departments and tonality (positive, negative, and neutral). Also in the dashboard, the title of the newspapers should be displayed and the stories should be in a position to be sorted/filtered using the variables like Tonality, Edition, etc. The system should also crawl through the YouTube channels of select news channels and identify the portion of the news bulletin pertaining to the Government of India using closed captioning. If closed captioning is not available, should use audio to text feature to capture the transcript. Once the portion of the video is identified, the said video has to be categorized into Departments and tonality. If the story is negative, the concerned PIB officer should get the notification immediately.

PB73	Call for cost-effective ways of making water source for piped drinking water supply sustainable in Rural areas	Jal Jeevan Mission was launched with the vision of providing drinking water in adequate quantity of prescribed quality on regular and long-term basis to every rural household. A comprehensive cost-effective technology is needed for the assessment of groundwater recharge done by source sustainability technology which is positively affecting the ground water-based source under consideration and predicting the longevity of the drinking water source to serve at the design discharge in the long-term considering the effect of drawl by the irrigation tube well. The technology should focus on the following: a. Monitoring of data for monitoring of drinking water source for a village. Generation of alerts in case of rapid deterioration. b. Innovative cost-effective technology for Rain Water Harvesting and Recharge. c. Innovative means to improve source sustainability. d. Re-use of Grey Water: Utilize non-toxic wastewater from households(with/without basic treatment) e. Accurate measurement of the capacity of the Aquifer and the actual water demand. f. Citing correct locations for recharge and discharge of ground water. B. Potential condition of Water Quality.
PB74	Developing a system for Patient Care in the Health Sector	As the demand for healthcare services continues to increase, healthcare professionals are facing challenges in meeting the needs of patients while maintaining quality care. One of the major challenges is providing 24/7 care for patients who require continuous monitoring and assistance.The challenge for this hackathon would be to develop innovative and effective solutions for designing and building robots for patient care in the health sector. Participants would need to consider various factors such as safety, reliability, ease of use, and affordability, while also ensuring that the robots are designed to meet the unique needs of patients in different healthcare settings.
PB75	Ideate and implement a system to enhance the quality of education in rural areas.	Ideate and implement a system to enhance the quality of education in rural areas. The aim of the system should not only focus on increasing the literacy rate but also should assist to elevate the communication skills and knowledge of the targeted society. The system should offer : * Study materials and mentor access. * Monitoring skill progress * Bridge the digital divide * Provide information about grants, loans and incentives. * Offer connectivity to financially disadvantage patrons. * Help individuals with employment opportunities. * Research and development * Access to material resources

PB76	AI Assisted Tele-medicine KIOSK for Rural India	Health care in rural India is still an unresolved area that demands improved and innovative solutions. The easy availability and access to expert doctors, according to the medical condition of the individual/patient can be provided by the AI-assisted telemedicine robotic Kiosk that can be set up anywhere in the village. Individuals may mark their identity through the biometric scanner. A robot may speak to the individual, enquiring about the illness. Later, the individual will be directed online to an expert doctor, via e-sanjeevani App. After the consultation, medicines and other associated services can be provided to them through the local Asha worker without any delay.
PB77	Air and water quality index and environment monitoring	Considering the importance of air and water to human existence, air pollution and water pollution are critical issues that require collective effort for prevention and control. Different types of anthropogenic activities have resulted in environmental dilapidation and ruin. One of the tools that can be used for such a campaign is Air Quality Index (AQI). The AQI was based on the concentrations of different pollutants: We are also familiar with the Water Quality Index (WQI), which in simple terms tells what the quality of drinking water is from a drinking water supply. There is a need for constant and continuous environment monitoring of air quality and water quality for the development of AQI and WQI, which in turn will enable clear communication of how clean or unhealthy the air and water in the study area is.
PB78	Development of Smart Toilet	Even in the most modern times, we are facing the problem, especially ladies, which is not having a hygienic toilet while traveling or going out. Here the problem statements aim to the development of an automatic self-cleaning, toilet system. Instead of water washing and all, the focus here is on ultraviolet disinfection, hot air drying, and smart saving of water. The final result is a toilet like that of a home. Also, there should be a provision to know the availability of the nearest toilets in working condition. In addition to the above, the smart toilet could also include the following features: A built-in air freshener: This would help to keep the toilet smelling fresh and clean. A motion sensor: This would automatically flush the toilet and open the lid when someone approaches. A built-in bidet: This would provide a more hygienic way to clean oneself after using the toilet.

PB79	Domestic Waste Management	Improper waste disposal not only contributes to environmental pollution but also affects the overall cleanliness and hygiene of a neighborhood. The challenge is to develop innovative solutions that address the specific issue of neighbors disposing of waste bags irresponsibly, causing litter and unsightly conditions. Participants are encouraged to propose and implement ideas that tackle this challenge and promote responsible waste management practices within the community. The solutions should focus on: Awareness and Education: Develop educational campaigns or initiatives to raise awareness among neighbors about the importance of proper waste disposal. This can include distributing informative materials, organizing community workshops, or leveraging digital platforms to educate residents about waste management best practices. Behavioral Change: Design strategies to encourage neighbors to adopt responsible waste disposal habits. This can involve implementing incentive programs, creating friendly competitions, or establishing neighborhood agreements that promote and reward responsible waste management behaviors. Community Engagement: Foster a sense of community ownership by engaging residents in waste management activities. This can involve organizing neighborhood clean-up drives, establishing community composting initiatives, or facilitating recycling programs to encourage active participation and responsibility among neighbors. Infrastructure Improvement: Propose solutions that address the lack of proper waste management infrastructure in the neighborhood. This can include advocating for the installation of additional waste bins, implementing a neighborhood waste collection system, or collaborating with local authorities to improve waste disposal facilities. Technology and Innovation: Leverage technology to support responsible waste management practices. This can involve developing mobile applications for waste collection scheduling and reminders, implementing smart waste bins with sensors and monitoring capabilities, or using blockchain technology to track and incentivize proper waste disposal. By addressing these aspects, the proposed solutions will contribute to overcoming the challenge of neighbors disposing of waste bags irresponsibly and promoting a cleaner, more sustainable neighborhood. The solutions should be practical, scalable, and feasible to implement within a residential community, fostering positive behavioral changes and encouraging a collective effort toward responsible waste management.

PB80	Compilation and Collection of optimum Level (variable) of data set from the Chemical and Petrochemical Industries in the country, aiming to smoothen the decision-making and insight generation in the strategic initiative.	The chemical and petrochemical industries generate a vast amount of data related to production, supply chain, market trends, quality control, and environmental impact. However, the availability, accessibility, and organization of this data vary across different companies and stakeholders, hindering effective decision-making and insight generation at a broader industry level. The challenge is to develop a solution that enables the compilation and collection of an optimum level of data sets from the chemical and petrochemical industries. The solution should address the following key aspects: Data Standardization and Integration: Design a framework that standardizes data formats, definitions, and structures across various companies and stakeholders within the industry. The solution should facilitate the integration of disparate data sources, including production data, laboratory test results, market data, and regulatory information, into a cohesive dataset. Data Collection and Aggregation: Develop mechanisms for efficient data collection and aggregation from chemical and petrochemical companies. The solution should include automated data collection processes, data validation, and quality checks to ensure the accuracy and reliability of the compiled dataset. Optimum Level of Data Selection: Define criteria and algorithms to determine the optimum level of data to be collected and included in the dataset. The solution should consider factors such as data relevance, representativeness, statistical significance, and data privacy regulations to ensure the collection of meaningful and valuable information without compromising data confidentiality. Data Analysis and Insight Generation: Implement analytical tools and techniques to analyze the compiled dataset and generate actionable insights. The solution should enable stakeholders to identify trends, patterns, and correlations within the data, facilitating strategic decision-making, performance benchmarking, and industry-wide improvements. Data Privacy and Security: Incorporate robust data privacy and security measures to protect sensitive information and ensure compliance with applicable regulations. The solution should prioritize data anonymization, encryption, access controls, and audit trails to safeguard the confidentiality and integrity of the collected data. By addressing these aspects, the proposed solution will streamline data compilation and collection processes within the chemical and petrochemical industries. It will enable stakeholders to access comprehensive and reliable datasets, promote data-driven decision-making, facilitate industry-wide insights and collaboration, and drive strategic initiatives for growth, sustainability, and innovation in the industry.

PB81	In-cab smart guidance and support system for Dragline Operator	Operating a dragline, a large excavation machine used in mining and construction requires precision, skill, and a deep understanding of the operating environment. However, there is a need for a smart guidance and support system that assists dragline operators by providing real-time information, alerts, and guidance, ultimately enhancing their performance and ensuring safe and accurate operations. The challenge is to develop an in-cab smart guidance and support system that empowers dragline operators with the following capabilities: Real-time Environmental Awareness: Develop a system that utilizes computer vision or sensor-based technologies to provide dragline operators with real-time information about their surroundings. This includes detecting and alerting the operator about potential hazards, obstacles, or unsafe conditions, such as proximity to other equipment, uneven terrain, or approaching vehicles. Operational Guidance and Monitoring: Create an interface that offers intuitive guidance and instructions to the dragline operator based on real-time data analysis. The system should provide visual cues, overlays, or augmented reality displays that assist the operator in achieving precise digging, loading, and dumping operations, optimizing productivity, and minimizing material loss. Performance Monitoring and Analysis: Implement mechanisms to track and analyze the performance of dragline operators in real time. The system should capture relevant operational data, such as cycle times, digging depth, fuel consumption, and maintenance requirements, to provide feedback and performance metrics that can be used for continuous improvement. Operator Training and Skill Development: Design interactive modules or simulations within the system that facilitate operator training and skill development. The system should provide virtual scenarios, real-time feedback, and performance benchmarks to help operators enhance their skills, decision-making abilities, and overall efficiency. Integration and Scalability: Develop a solution that can seamlessly integrate with existing Dragline systems and infrastructure. The system should be compatible with the dragline's control systems, sensors, and data sources, ensuring reliable data transmission and compatibility across different dragline models or manufacturers. By addressing these aspects, the proposed in-cab smart guidance and support system will enhance the situational awareness, operational efficiency, and safety of dragline operators. It will empower operators to make informed decisions, optimize their operations, and contribute to the overall productivity and success of mining or construction projects.

PB82	Forecasting and scheduling of railway rakes.	At present rake supply is made by railway on a cluster basis / Coalfield basis for a group of mines. â€¢ At times, the placement of rakes in a siding is made where coal sock is not adequate. This leads to the payment of demurrage charges. â€¢ A digital platform/ algorithm needs to be created for all the available railway siding where the updated status of coal stock in siding shall be maintained online. â€¢ This will help in sending railway rakes available at the nearest location and also reduce in demurrage cost of the company.

PB83	Analytics based on Govt. Land Information System(GLIS) Data	The Government Land Information System (GLIS) contains a vast amount of geospatial data related to land resources, land ownership, boundaries, land use, and other valuable information. However, harnessing the potential of this data and transforming it into actionable insights remains a challenge. The goal of this hackathon is to develop analytics solutions that leverage GLIS data to address critical societal challenges and support evidence-based decision-making. Participants are encouraged to explore and analyze GLIS data in creative ways to generate meaningful insights. The solutions should focus on one or more of the following domains: Urban Planning: Develop analytics tools that enable urban planners to make informed decisions regarding land use, zoning regulations, infrastructure development, and urban expansion. The solutions should help optimize resource allocation, improve urban mobility, and enhance the quality of life in cities. Infrastructure Development: Design analytics models that identify optimal locations for infrastructure projects such as roads, bridges, airports, or power plants. The solutions should consider factors like environmental impact, accessibility, population density, and existing infrastructure to support sustainable and efficient development. Environmental Conservation: Develop analytics-based approaches to monitor and manage natural resources, protected areas, and environmental impact assessments. The solutions should enable the identification of ecologically sensitive areas, conservation priorities, and strategies for mitigating environmental risks. Land Management and Governance: Create analytics solutions that facilitate efficient land administration, land registration, and land-use planning processes. The solutions should enhance transparency, streamline land transactions, prevent encroachments, and support equitable distribution of land resources. Socio-economic Analysis: Utilize GLIS data to conduct socio-economic analysis at various spatial scales. Develop models that correlate land characteristics, demographic data, economic indicators, and social factors to gain insights into patterns, disparities, and potential interventions for inclusive development. Participants should leverage their expertise in data analytics, machine learning, geospatial analysis, and visualization to create innovative solutions. The solutions should demonstrate the ability to handle large datasets, ensure data quality, provide accurate predictions or recommendations, and offer user-friendly interfaces for stakeholders to interact with the insights generated. By harnessing the power of GLIS data through advanced analytics, the proposed solutions will empower government agencies, policymakers, urban planners, environmentalists, and other stakeholders to make informed decisions, optimize resource allocation, and foster sustainable development in various domains.

PB84	Development of a Digital Platform for multi-modal visibility of coal transportation	Coal transportation involves a complex network of multiple modes of transportation, including trucks, trains, and ships. However, the lack of a unified digital platform for tracking and monitoring coal movement across these modes often leads to inefficiencies, delays, and a lack of transparency in the coal supply chain. This hampers the ability of stakeholders, such as coal producers, transporters, and end-users, to make informed decisions and optimize logistics operations. The challenge is to develop a digital platform that provides multi-modal visibility of coal transportation, allowing stakeholders to track the movement of coal from source to destination seamlessly. The platform should leverage image analytics, data integration, and advanced visualization techniques to provide real-time insights into the location, status, and condition of coal shipments. It should enable effective coordination, proactive decision-making, and optimization of logistics operations for all stakeholders involved in the coal supply chain. The solution should address the following key aspects: Data Integration: Create a scalable and robust system that integrates data from various sources, such as GPS devices, sensors, transportation management systems, and third-party APIs. The platform should be capable of handling large volumes of data from different modes of transportation and ensure the accuracy and reliability of the integrated information. Multi-Modal Tracking: Develop image analytics capabilities to analyze real-time images or video feeds from cameras installed at critical points in the coal transportation network. The platform should identify and track coal-carrying vehicles, wagons, or ships, and provide accurate information on their location, movement, and capacity utilization. Real-Time Visualization: Design an intuitive and user-friendly interface that displays real-time data on the location and status of coal shipments across multiple modes of transportation. The platform should provide interactive maps, dashboards, and alerts that enable stakeholders to monitor and analyze the coal transportation process effectively. Analytics and Optimization: Incorporate advanced analytics techniques to generate insights and actionable recommendations for optimizing coal logistics operations. The platform should identify bottlenecks, predict delays, and suggest alternative routes or transportation modes to improve efficiency, reduce costs, and minimize environmental impact. Security and Privacy: Implement robust security measures to protect sensitive data and ensure the privacy of stakeholders. The platform should adhere to industry best practices for data encryption, access control, and compliance with relevant regulations. By addressing these aspects, the proposed digital platform will enable stakeholders in the coal supply chain to gain real-time visibility and insights into multi-modal coal transportation. This will lead to improved operational efficiency, reduced transportation costs, enhanced transparency, and better decision-making for all parties involved in the coal supply chain.

PB85	Application of Image Analytics for Tree enumeration for diversion of Forest Land.	When forest land needs to be diverted for developmental projects, it is crucial to have an accurate understanding of the tree population within the affected area. Traditional methods of tree enumeration, such as manual surveys or ground-based assessments, can be time-consuming, expensive, and prone to errors. To address these challenges, the challenge is to develop an image analytics solution that automates the tree enumeration process using satellite imagery or aerial photographs, or any other means (using section view).. The proposed solution should address the following key aspects: Image Data Analysis: Develop a computer vision algorithm that can analyze satellite imagery or aerial photographs to detect and identify trees within the designated forest areas accurately. The algorithm should account for variations in tree species, sizes, and environmental conditions to ensure reliable results. Tree Counting and Categorization: Design a system that can count the number of trees in the specified area and categorize them based on their species or other relevant parameters like diameter(girth). The solution should provide accurate and detailed information about the tree population to facilitate decision-making during the land diversion process. Accuracy and Validation: Create mechanisms to validate the accuracy of the image analytics solution by comparing the results with ground-truth data obtained through manual surveys or other reliable methods. The solution should aim to achieve a high level of accuracy and minimize false positives or false negatives in tree identification and counting. Scalability and Efficiency: Develop an efficient and scalable solution capable of processing large volumes of image data within a reasonable timeframe. Consider optimization techniques and parallel processing approaches to ensure timely results, especially for large forest areas or time-sensitive projects. Integration and Visualization: Enable seamless integration of the image analytics solution with existing forest management systems or tools. Provide visualizations or interactive interfaces that allow users to explore and interpret the results easily. This could include the generation of maps, reports, or other visual representations of the tree enumeration data. Ethical and Environmental Considerations: Ensure the solution adheres to ethical practices, respects privacy concerns, and minimizes potential environmental impact. Consider the privacy of sensitive data, secure storage of images, and compliance with environmental regulations throughout the development and deployment of the solution. By addressing these aspects, the proposed image analytics solution will facilitate efficient and accurate tree enumeration for the diversion of forest land. It will provide stakeholders with vital information to make informed decisions regarding land usage, environmental impact assessment, and conservation efforts, ensuring responsible and sustainable development.

PB86	Development of a Telematic control unit for capturing vital data of a vehicle without using company fitted telemetry data port.	Many businesses rely on telemetry data from vehicles to gain insights into their fleet's performance, driver behavior, and maintenance needs. However, in some scenarios, vehicles may not have a telemetry data port or the port may not be accessible due to limitations imposed by the vehicle manufacturer. The challenge is to develop a Telematic Control Unit (TCU) that can capture essential vehicle data without relying on the company-fitted telemetry data port. The TCU should provide a robust and reliable method of collecting data from various sensors and systems within the vehicle, ensuring real-time monitoring and analysis capabilities for fleet management purposes. The solution should address the following key aspects: Data Capture: Develop a TCU that can interface with the vehicle's systems and sensors to capture vital data such as engine performance, payload, fuel consumption, speed, location, and diagnostic information. The TCU should be capable of extracting data accurately and reliably, regardless of the vehicle's make or model. Wireless Connectivity: Implement a wireless communication mechanism for transmitting the captured data from the TCU to a centralized server or cloud platform. The solution should support a secure and robust wireless protocol that ensures data integrity and confidentiality. Real-time Monitoring and Analysis: Design a user-friendly dashboard or interface that allows fleet managers to monitor and analyze vehicle data in real time. The dashboard should provide insights into vehicle performance, payload, fuel efficiency, driver behavior, and maintenance needs, enabling businesses to make informed decisions and optimize their operations. Compatibility and Integration: Ensure that the TCU solution can be easily integrated with existing fleet management systems or third-party applications commonly used in the industry. The solution should provide APIs or other integration capabilities to enable seamless data exchange and interoperability. Security and Privacy: Implement strong security measures to protect the captured data from unauthorized access or tampering. The solution should adhere to industry best practices for data security and privacy, including encryption, authentication, and access control mechanisms. By addressing these aspects, the proposed TCU solution should enable businesses to capture and leverage vital vehicle data without relying on the company-fitted telemetry data port. This will empower fleet managers to optimize fleet performance, reduce maintenance costs, enhance fuel efficiency, and ensure compliance with regulatory requirements. It may also fetch data from a company-fitted telemetry port without opening the port in a non-invasive manner.

PB87	Real-time visibility of Dumper load status to Shovel operator	Challenge Description: In large-scale mining, shovel operators are responsible for loading materials onto dumpers. However, the lack of real-time visibility regarding the load status of dumpers often leads to inefficiencies and delays in the overall workflow. Currently, shovel operators rely on manual communication or visual cues to determine whether a dumper is ready for loading or its loading has been completed. The challenge is to create a system that provides shovel operators with instant and accurate information about the load status of dumpers, eliminating the need for manual communication and improving the efficiency of the operation. The solution should leverage real-time data from sensors or other reliable sources to deliver timely updates to shovel operators, enabling them to make informed decisions and optimize their loading process. The solution should address the following key aspects: Real-time Monitoring: Develop a mechanism to continuously monitor the load status of dumpers in real time. This may involve integrating sensors, IoT devices, or any other suitable technology to collect and transmit data reliably. Visualization and Alerts: Design an intuitive interface that displays the load status of each dumper to the shovel operator in real time. The interface should provide clear visual indicators and notifications to inform the operator about the readiness of each dumper for loading as well as inform the shove operator when the loading of the dumper is completed. Data Integration: Create a system that seamlessly integrates with existing infrastructure, such as the shovel operator's workstation or control panel. The solution should ensure smooth data transmission and compatibility with other systems or software used in the mining site. Scalability and Robustness: Develop a solution that can handle a large number of dumpers simultaneously and is capable of operating reliably in challenging environments. Consider factors such as connectivity issues, data synchronization, and potential disruptions in the mining site. Security and Privacy: Implement appropriate security measures to protect the system from unauthorized access and ensure the privacy of sensitive data. Consider encryption, authentication, and other relevant security practices to safeguard the system and maintain data integrity. By addressing these aspects, the proposed solution should enhance the productivity and efficiency of shovel operators, reduce downtime caused by miscommunication or delays, and ultimately optimize the loading process in mining operations.

PB88	A system of IoT Devices to prevent under-loading / overloading of Railway wagons.	CIL has been supplying coal to its consumers by Rail through Railway Sidings. The railway wagons at such sidings are loaded through contractual means by payloader. The loading of wagons by contractual arrangement often results in overloading or underloading Railway wagons. The rules of Penal overloading and underloading are notified by Railway. Any penalty for overloading charged by the Railway for any consignment is payable by the purchaser. However, in case of underloading of wagons, credit for idle freight is adjusted in coal bills. Thus any idle freight for under-loading is borne by CIL. During 2021-22, the expense for under-loading was nearly Rs.593 Cr. whereas the contract for wagon loading itself was only Rs.276 Cr. Hence, a digital solution in the form of sensor/ IoT is needed to prevent the under-loading and overloading of Railway wagons.
PB89	Chatbot to respond to text queries pertaining to various Acts, Rules, and Regulations applicable to Mining industries	A Chatbot is a computer program that uses Artificial Intelligence (AI) and Natural Language Processing (NLP) to understand customer questions and automate responses to them, imitating human conversation. As of now, various Acts, Rules and Regulations, DGMS Circulars, CoI Proceedings, etc. are applicable to Mining industries. These are some of the Acts and Rules: The Coal Mines Act, 1952 Indian Explosives Act, 1884 Colliery Control Order, 2000 Colliery Control Rules, 2004 The Coal Mines Regulations, 2017 The Payment of Wages (Mines) Rules, 1956 Additionally, land-related laws i.e. CBA, LA, RandR related queries can also be incorporated to develop Robust Management Information System. Hence it is proposed to make a chatbot available 24/7 for stakeholders and customers which can answer all their queries regarding the rules, acts, and circulars.
PB90	Dredging Analysis and Decision Support System.	Port channels are to be dredged regularly in order to ensure the required draft for the vessels to be berthed in Port Berths. Siltation is one of the pain areas of Cochin Port and the expenditure towards dredging is very high. A cost-effective solution is required to: i. Monitor the real-time draft in various sectors of the port channels and berths ii. Support system to predict the siltation expected within a stipulated period based on the historical data of draft and meteorological data
PB91	Drone-based surveillance system for the vessels plying in port areas and encroachments	Cochin Port is having water bodies and a land area of 2177 acres. Licenses are being issued by the Port to the marine vessels to ply within the Port limit. A cost-effective solution is required to: i. Tracking and reporting of harbor crafts like boats, barges, dinghies, etc., that ply in the Port water limit. ii. Encroachments if any, in the port limits need to be watched constantly and report the same if any. iii. Management Information System regarding the violators, encroachments, etc.

PB92	Application Development for monitoring of wool from Farm to fabric	An App-based solution for the wool sector in India which can have the following features is required: 1. Wool Market Information: Provides real-time market information on wool prices, trends, and news. 2. Wool Tracking: Allows users to track the production and transport of their wool from farm to market. 3. Quality Assurance: Provides a platform for wool producers to ensure the quality of their wool and access to wool grading services. 4. Wool Storage and Warehousing: Helps farmers store and manage their wool inventory. 5. Wool Processing: Helps farmers access wool processing services such as shearing, sorting and dyeing 6. Wool Trading Platform: Allows wool producers to buy and sell wool directly from other farmers or buyers. 7. Online Wool Marketplace: Provides a platform for wool producers to sell their wool directly to buyers 8. Wool Education and Training: Provides a list of wool producers/artisans region-wise, and state-wise data to provide educational resources and training to help them improve their production, quality, design and marketing skills.

PB93	Threat zone of an explosion particularly in oil and gas handling industries or refineries	Development of software for Indian physical territory containing exact geographical locations of all hazardous locations which contain potential risk to damage and destroy human life, property, and environment on a huge sale. This software should be able to find out the area or more precisely the threat zone in which the radiations and blast waves of an explosion will spread to damage its surrounding locality. It's been observed in many explosions and fires in industries, say according to the official report of Jaipur IOCL Fire' by 'SK ROY, GM (ISE), CO INDIAN OIL CORPORATION LIMITED, held on 29 October 2009, where the fire following an explosion in a tank caused 9 tanks out of 11 to explode drastically after the first explosion and the fire continues to spread it's havoc for a sum total of 11 days and no fire personnel, experts and fire services could suggest ways to put off the fire and the fire extinguished by itself after the crude oil(fuel in the tanks on fire) gets totally burned. According to this report, later MB LAL Committee provided 118 recommendations for oil installations but the fighting capabilities cannot be utilized if they can not be directed through the right way and direction of approach towards the fire. The above example shows that even if we have sufficient firefighting resources but if they approach the fire from the wrong direction say from a direction or zone where radiation is at its peak or from where the efficiency of firefighting will be least the available resources are of no use. One should know the zone affected by the fire and the area where the radiations will be very high, high, medium, or low i.e. areas could be distinguished according to the radiations and potential to damage the human, flora, and fauna of the locality present in that threat zone. If a fire will be tackled from the right direction it can be extinguished in a more efficient manner with the least use of resources, and the least wastage of resources, within the least time. One of the most useful advantages of such software is that it can be used to evacuate people and animals from areas with disastrous exposure to radiation so that more and more lives can be saved until the fire will be extinguished or under control. So, such software should be made and propagated among fire personnel for its more efficient and convenient use for different eases and zones for different types of storage i.e different threat zones for different types of storage like LPG bullets, Horton spheres storing the same volume of LPG with different wind speed and wind directions will have different affected areas under radiations. Development of such software will help a lot to our fire services to tackle any type of explosion and fire scenarios with more efficiency.

PB94	Computerized cognitive Retraining Program for Home training of Children with Disabilities.	Cognitive retraining is a therapeutic strategy that seeks to improve or restore a person's skills in the areas of paying attention, remembering, organizing, reasoning and understanding, problem-solving, decision-making, and higher-level cognitive abilities. Children with Developmental Disability have various cognitive Disabilities. It is common for children with developmental disabilities to suffer from various cognitive disabilities. Presently many therapists use manual cognitive retraining and it is also difficult to monitor home-based training. Few centers offer EEG Neuro-Feedback Training. The present proposal is the combined form of Both EEG Neuro-feedback and home training. Clinicians can easily monitor the changes based on the progress in- home training as well as changes in EEG profile with a single software.
PB95	Active Prosthetic ankle and adaptive equipment for bike riding in lower limb amputees	Currently, used prosthetic systems for lower limb amputees can replicate normal human locomotion to a maximum extent which is considered a basic need; however, finding the ideal prosthetic solution for their desired lifestyle can be difficult. From the survey, it has been observed that there is a demand from the lower limb amputee population regarding the use of motorbikes for transport purposes. However, for lower limb amputees, this operation creates some inconvenience as there is no active ankle movement. Most importantly, the prosthetic feet currently used in the Indian context possess stationery ankles, and in some cases, more advanced feet use hydraulics or external-powered systems which don't solve the practical requirements of riding motorbikes for this patient population. The main functions when riding a motorcycle is gear selection and brake operation using the amputated leg. The right foot applies the rear brake on the right side of the motorbike. This is normally operated with ankle movements to press down the foot on the brake lever. Considering the inconveniences being caused to the lower limb amputees, there is a requirement for some modification options such as utilizing a modified brake lever. Alternatively, the left side of the bike has a gear selector to accentuate the controlled speed. This is usually activated by left ankle movements to move the forefoot up and down depending on whether the gears need to go up or down. The modification for the lower limb amputees may include the left-hand thumb operated up and down gear selection to module the operation of active ankle prosthesis in either direction for forefoot up and down motions at 5-10 degrees intervals to engage and disengage the gear module. Development of brake operation will be useful to resolve the practical issues of riding motorbikes in lower limb amputees, the dream of which was once upon a time lost due to the lower limb amputation

PB96	The Employment Department at present has a digital platform www.pgrkam.com and its mobile application to provide almost all services offered to job seekers and employers through digital means. The portal has multiple modules like private sector jobs, government jobs, self-employment avenues, foreign jobs, foreign study, counseling, guidance, induction into armed forces, job melas, etc. Currently, when a user visits the portal/app, there is no hand-holding mechanism to help the user get to the part of the digital platform which will resolve his queries. The user is required to navigate across multiple modules on the portal/ app to search for answers.	The requirement set is given below: 1. To build a smart chatbot on top of Large Language Model (LLM)- driven chatbots like ChatGPT that uses transformers like GPT3. The aim is to assist the user through a digital assistant to provide answers to all queries the user and reduce the time and effort while navigating to any part of the PGRKAM digital platform. 2. The system should be able to intelligently addresses text and voice queries in Punjabi/English/Hindi around job search, skill development and foreign counseling along with recommending jobs based on the candidate's preference. A multilingual screen reading module could be added for better query handling. 3. The app will also be able to maintain candidates' history and preferences to add a level of personalization for better recommendations. Expected Outcome User should be able to chat/read/listen and discover any information pertaining to job, skill development or foreign counseling on smartphone or laptop computer.
PB97	PGRKAM web application (www.pgrkam.com) and the PGRKAM Android application of the Punjab Government provides employment data to the prospective candidates. The platform has a sizeable number of user base but it lacks integrated analytics tools to understand how the users are consuming the information.	It is desired that an analytics tool similar to Mixpanel/Kissmetrics/Google Analytics be developed/integrated to the PGRKAM app to enable the administrators to track the users' behavior and actions. It is desired that the following details be captured by the tool: 1. Channel where the user spotted the PGKAM advertisement. 2. Demographics of users. 3. Webpage/service accessed/information consumed by the users. 4. Job suggestions based on a potential match in job requirements and skillsets of registered users 5. Collective analysis of success/ failure rate of the user profile with respect to job requirements for better future suggestions along with job recommendations using algorithms like Genetic Algorithm or Collaborative Filtering or any other recommendation algorithm The details are expected to be displayed using better visualization tools to enable the teams to analyze how and why people engage, convert, and retain—in real-time, across devices—to improve their user experience. Expected Outcome User movement and user behavior should be successfully tracked across the PGRKAM app and website for timely reporting and analytics pertaining to user profile, behavior, and experience

PB98	PGRKAM web application (www.pgrkam.com) and the PGRKAM Android application of the Punjab Government provides employment data to the prospective candidates.	PGRKAM web application (www.pgrkam.com) and the PGRKAM The Android application of the Punjab Government provides employment data to prospective candidates. It is required that the candidates should be able to receive job notifications while they are on the move or while they are using their camera phones. The job notifications received by the candidates should be corresponding to the geospatial coordinates of the candidates. The mandatory requirements are listed below: 1. The application should accommodate the AR feature. As the candidate uses the smartphone camera (i) A notification would be received on the screen about the jobs or gig jobs or skill development initiatives or foreign counseling initiatives available in that area. (ii) The details should also be made available on the screen. (iii) A weblink should be available that navigates to the webpage where the candidate can successfully apply for the job or the gig. 2. The GPS feature should be integrated to generate an interface that enables the employers (demand side) to view the prospective registered candidates having desired skills for a specific job. This the information must be available in real-time based on the geographical coordinates of the candidate and employer. 3. The app should be able to push notifications to candidates' smartphone about a job, skill development, or foreign counseling based on their geospatial coordinates. 4. The app should also be able to maintain candidates' history and preferences to add a level of personalization for better recommendations. The app should employ Machine Learning (ML), Data Science, Deep Learning, Augmented Reality (AR), Global Positioning System (GPS) Expected Outcome User should be able to find jobs at any location and can even find jobs on his camera phone as and when he points the camera on a particular building/ location within a geographical area.

PB99	Design of CYBER-SECURITY ENABLED SMART CONTROLLER for grid-connected Microgrid	This aims to develop a cybersecurity-enabled smart controller specifically designed for grid-connected microgrids. The smart controller will play a crucial role in ensuring the secure and efficient operation of the microgrid, protecting it from cyber threats and unauthorized access. Key Objectives: Secure Communication: Design a communication framework that employs robust encryption protocols to safeguard the data transmitted between the smart controller and various components within the microgrid. This framework should prevent unauthorized access, tampering, and eavesdropping. Intrusion Detection and Prevention: Implement advanced intrusion detection and prevention mechanisms within the smart controller to identify and mitigate potential cyber attacks in real-time. Develop algorithms and techniques to detect anomalies, malicious activities, and vulnerabilities within the microgrid system. Access Control: Create an access control mechanism for the smart controller that regulates user access based on roles and privileges. This mechanism should prevent unauthorized configuration changes and ensure only authorized personnel can modify or interact with the microgrid system. Cybersecurity Auditing: Develop a logging and auditing system within the smart controller to track and monitor all activities and events related to the microgrid's cybersecurity. This system should provide detailed logs, alerts, and reports to facilitate post-incident analysis and forensic investigations. Security Patch Management: Implement a mechanism within the smart controller to manage and deploy security patches and updates across the microgrid system. This will ensure that vulnerabilities are promptly addressed, reducing the risk of potential cyber attacks. Scalability and Compatibility: Design the smart controller to be scalable, allowing it to accommodate the increasing complexity and size of grid-connected microgrids. Ensure compatibility with different microgrid components, protocols, and standards to facilitate seamless integration into existing infrastructure. Usability and User Interface: Develop a user-friendly interface for the smart controller that enables efficient monitoring, configuration, and management of the microgrid's cybersecurity settings. The interface should be intuitive and accessible to both cybersecurity experts and non-technical users. This PS encouraged to explore innovative cybersecurity methodologies, including encryption algorithms, anomaly detection techniques, and secure communication protocols. The resulting smart controller will contribute significantly to the protection and reliable operation of grid-connected microgrids, ensuring the stability and security of the power distribution system in the face of evolving cyber threats.

PB100	Language translator tool to convert English to Hindi (official Language) which can be used by all the government organizations websites officially.	The objective is to develop a language translator tool specifically designed for government organizations in India. The tool should provide the capability to translate English content into Hindi, the official language of the country. This will enable government websites to cater to a wider audience, including Hindi-speaking citizens who may have difficulty understanding English. The language translator tool should possess the following key features: Translation Accuracy: The tool should offer accurate translations, maintaining the context and meaning of the original English content. It should handle various language intricacies, idiomatic expressions, and technical terms commonly used in government-related documents. User-Friendly Interface: The tool should have a simple and intuitive interface, ensuring ease of use for both website administrators and end-users. It should seamlessly integrate into government websites, allowing users to translate content with minimal effort. Website Integration: The language translator tool should be compatible with different website architectures and frameworks commonly used by government organizations. It should provide developers with an API or plugin that can be easily integrated into existing websites without significant code modifications. Language Preservation: The tool should be designed to preserve the cultural and linguistic nuances of the Hindi language. It should take into account regional variations and dialects to ensure accurate translations that resonate with Hindi-speaking citizens across the country. Security and Privacy: As government organizations handle sensitive information, the language translator tool should adhere to high security and privacy standards. It should protect user data, prevent unauthorized access, and comply with relevant data protection regulations. Scalability: The tool should be scalable to handle a large volume of translation requests, ensuring smooth performance even during peak usage periods. It should be capable of handling concurrent translations across multiple government websites. Participants in the hackathon are encouraged to explore innovative approaches, leveraging natural language processing (NLP) techniques, machine learning algorithms, and other relevant technologies to achieve accurate translations. The resulting language translator tool will contribute significantly to improving the accessibility and usability of government websites, facilitating effective communication between government organizations and Hindi-speaking citizens.

PB101	Automated Public Lighting	public lighting in roads and public areas are lit even during daytime resulting in the wastage of precious energy. The conventional method being employed is manual switching on and off and in some places, there has been a shift towards timer control for the on-off of public lighting. However, this has not been very effective. System to be simulated by the participants Desired Outcome: Smart public lighting systems, that are centrally controlled by IOT would facilitate dynamical adjustment of illumination and provide a record of the consumption. This would dramatically result in lower operating costs and would aid in low downtime of failed lighting systems as the defective locations can be identified.

		Energy consumption in industrial and commercial facilities is a major expense for businesses and contributes significantly to environmental pollution. The lack of visibility and control over energy usage makes it difficult for businesses to manage their energy costs and reduce their carbon footprint. conventional energy management systems have limitations in terms of accuracy and scalability and often require manual intervention to operate effectively. To address these challenges, an Al-powered energy management system can be developed that uses machine learning algorithms and data analytics to optimize energy consumption in industrial and commercial facilities. The system will collect real-time energy data from various sources, such as sensors and meters, and use this data to predict energy usage patterns and identify opportunities for energy savings. The system will also provide recommendations for energy-efficient practices and automate the control of energy-consuming devices, such as lighting and HVAC systems, to optimize energy consumption. The Al-powered energy management system will be designed to be scalable and adaptable to different types of industrial and commercial facilities. it will also be user-friendly, providing an intuitive interface for facility managers and building owners to monitor and control energy usage. The system will be designed to integrate with existing building automation systems and will be able to operate autonomously with minimal human intervention, The goal of developing an Al-powered energy management system is to help businesses reduce their energy costs, improve their operational efficiency, and reduce their environmental impact by optimizing their energy consumption. Desired Outcome: The desired outcome of developing an Al-powered energy management system for industrial and commercial facilities to optimize energy consumption is to provide businesses with a cost-effective and environmentally sustainable solution to manage their energy usage. The system will offer several benefits, including: 1. Cost savings: By optimizing energy consumption, the system will help businesses reduce their energy bills and save money. The Al-powered system will continuously analyze energy usage patterns and provide recommendations for energy-efficient practices that can help reduce energy waste and costs. 2. Improved energy efficiency: The system will enable businesses to monitor and control their energy consumption in real-time, allowing them to identify areas of inefficiency and implement solutions to improve energy efficiency. The system will also provide automated control of energy-consu ming devices, such as lighting and HVAC systems, to further optimize energy consumption. 3. Reduced carbon footprint: By reducing energy waste, the system will help businesses reduce their carbon footprint and contribute to a more sustainable future. This will help businesses meet their environmental targets and obligations, such as carbon reduction commitments. 4. Scalability: The Al-powered energy management system will be desiSned to be scalable and adaptable to different types of industrial and commercial facilities. This will allow businesses to implement the system across multiple sites and improve their overall energy management practices. 5. User-friendliness: The system will be designed with a user-friendly interface, making it easy for facility

PB103	Monitoring through Al Based Remote Access Vehicle	In Hydroelectric Projects (HEPs), monitoring and upkeep of HRT (Head Race Tunnels) is a critical task for the proper operation and safety of the plant. For Inspection of the HRTS, the HRT needs to be flushed/ emptied & inspected which is a cumbersome process. In order to avoid interruption during the operation of the plant, services of a Remotely Operated Vehicle (ROV) for inspection of the HRT in submerged condition could be considered for deployment.
PB104	Al Based Drone Application	Systems for Drone-based assessment of large size Catchment areas of Hydro Power plants and monitoring the progress of the treatment plan.
PB105	Al-based Generative design of Hydro power plants.	Systems for Al-based Generative design of Hydro Power plants including Civil structures, Hydro- mechanical and Electro-mechanical equipment etc.
PB106	Dashboard for real-time monitoring of construction projects.	Designing of dashboards for Real-time monitoring of Construction projects using IOT devices and backend Artificial intelligence/ML tools to track Resources in the form of equipment/manpower, monitor their efficiency and safety in all situations.

PB107	Estimation of inflow to a reservoir from the rainfall considering soil moisture in its catchment and releases from upstream reservoirs and automatically opening of reservoir gates for moderately releasing the water to avoid the flooding in a basin.	Effective management of water resources in reservoirs is a crucial aspect of mitigating flooding, ensuring water availability, and maintaining ecological balance in a basin. The challenge lies in accurately estimating the inflow to a reservoir, taking into account various factors such as rainfall, soil moisture conditions within the reservoir's catchment area, and upstream reservoir releases. The subsequent task of managing reservoir gates to release water in a controlled manner to prevent flooding adds another layer of complexity. The existing methodologies for reservoir management often rely on manual intervention or simplistic models that may not capture the intricacies of changing environmental conditions. As a result, basins are vulnerable to both overflows and insufficient water supply during critical periods. To address this issue, there is a pressing need for an innovative solution that integrates data-driven approaches and automation to optimize reservoir gate operations and mitigate flood risks. Key Challenges: Accurate Inflow Estimation: Developing a robust and accurate method to estimate the inflow to a reservoir by considering multiple parameters, including rainfall intensity, soil moisture conditions within the catchment area, and potential contributions from upstream reservoir releases. Real-time Data Integration: Integrating real-time data from weather forecasts, soil moisture sensors, and upstream reservoir releases into a centralized system for inflow estimation and decision-making. Model Complexity: Designing sophisticated models that can effectively capture the complex interactions between rainfall, soil moisture, reservoir levels, and inflow dynamics, while remaining computationally feasible. Optimal Gate Control: Developing an automated gate control mechanism that can regulate the release of water from the reservoir in a manner that prevents flooding downstream while ensuring optimal utilization of the stored water. Flood Risk Assessment: Incorporating flood risk assessment models that consider downstream vulnerability, historical flood patterns, and potential impacts of various release strategies. Adaptive Decision-Making: Creating algorithms that can adapt to changing conditions, such as sudden heavy rainfall events or unexpected reservoir releases from upstream, to make timely and accurate decisions. Communication and Coordination: Ensuring effective communication and coordination among various stakeholders, including reservoir managers, weather forecast providers, and upstream reservoir operators. Balancing Water Needs: Striking a balance between releasing enough water to prevent flooding while also maintaining a sufficient reservoir volume for future water supply and downstream water needs. The proposed solution seeks to tackle these challenges by employing advanced data analytics, machine learning, and automation technologies. By creating an integrated system that leverages real-time data and predictive models, the solution aims to optimize reservoir gate operations to prevent flooding while optimizing water utilization. This would lead to enhanced flood resilience, improved water management, and increased ecological sustainability within the basin.

PB108	Automatic regulation of valves for release of water based upon soil moisture availability in the root zone of the crop, using artificial intelligence, in a piped and micro irrigation network of irrigation system.	In modern agricultural practices, efficient water management plays a critical role in achieving optimal crop yields, conserving water resources, and maintaining ecological balance. However, existing irrigation systems often lack the precision required to deliver water tailored to the actual needs of crops, leading to water wastage, suboptimal plant growth, and environmental degradation. This problem is particularly pronounced in piped and micro irrigation networks, where traditional methods of manual control fail to adapt dynamically to varying soil moisture conditions within the root zone of crops. The core issue lies in the absence of an automated mechanism that can regulate the release of water based on real-time soil moisture availability. The inconsistency in water distribution and the inability to synchronize irrigation with crop water requirements result in detrimental outcomes for both the agricultural yield and water conservation efforts. To address this problem, there is a compelling need for an innovative solution that leverages artificial intelligence (AI) to enable the automatic regulation of valves for water release in piped and micro irrigation networks. By incorporating AI-powered soil moisture monitoring and decision-making processes, this solution aims to bridge the gap between water supply and crop demand, while also optimizing resource utilization and minimizing environmental impact. Key Challenges: Dynamic Water Demand: Crops have varying water requirements influenced by factors such as growth stage, weather conditions, and plant type. Developing an AI system capable of accurately predicting these dynamic water demands is a complex challenge. Real-time Data Integration: Integrating real-time soil moisture data from multiple sensors across a field into a centralized AI system requires robust data collection, transmission, and processing mechanisms. Algorithm Precision: Designing AI algorithms that can effectively analyze soil moisture data, historical trends, and other relevant parameters to make accurate decisions about water release timing and quantities. Valve Control Mechanism: Developing an automated valve control mechanism that can respond swiftly and accurately to the AI's recommendations while considering the physical characteristics of the piped and micro irrigation network. Adaptability: Ensuring that the AI system can adapt to changing environmental conditions, crop types, and variations in soil properties over time. User-Friendly Interface: Designing a user-friendly interface that allows farmers and irrigation managers to monitor and intervene in the system as needed, while also trusting in the AI's autonomous decisions. Economic Viability: Balancing the potential costs of implementing an AI-driven system with the expected benefits in terms of increased crop yield, water savings, and operational efficiency.

PB109	AI-enabled water well predictor	The web-based system is expected to help common users in making decisions regarding water well in a particular location. The system will be driven by NAQUIM data of CGWB like lithology, geophysical logs, water levels, water quality, aquifer maps, etc. On a user-selected point the AI-based predictor should be able to provide the following information: i. Whether the area is suitable for water well construction or not? ii. At what depth water-bearing zones are expected to be encountered; iii. What is the expected discharge of the well; iv. what is the most suitable drilling technique in the area; v. What is the expected quality of groundwater in the area and other relevant information? There should be a user-friendly graphical user interface. Provisions should also be there to obtain the user feedback in a structured manner.
PB110	A mobile app that crowd sources water-related problems from around a community, open sources data, etc. and display them on a map.	The use of social media data in disaster and crisis management is increasing rapidly. Particularly in connection to flooding events, water quality issues in ponds/lakes, urban flooding, and drainage problem, etc., geo-referenced images shared by citizens can provide situational awareness to emergency responders, as well as assist with financial loss assessment, giving information that would otherwise be very hard to collect through conventional sensors or remote sensing products. Discussion about such events can also be found on various social media platforms. Further, recent advances in computer vision and deep learning can perhaps support the automated analysis of these data. In this problem, software/ algorithm to be developed focusing on ground-level images taken by humans. Considering distinct datasets from different sources, the algorithm of the developed mobile app should be able to categorize water-related problems at different administrative. Further, the mobile app should serve as a valuable tool for the administrators for planning and managing water-related problems.

PB111	Development of AI, ML and Chat boat-powered Interactive Robot Mascot (Chacha Chaudhary) and digital avatar to strengthen the river people connect component of Namami Gange.	Chacha Chaudhary was declared the mascot of the Namami Gange Programme at the 37th Executive Committee meeting of the National Mission for Clean Ganga (NMCG). NMCG has tied up with Diamond Toons to develop and distribute comics, e-comics, and animated videos. The objective of bringing about behavioral change amongst children towards the Ganga and other rivers. To make this solution more interactive one step further ahead, AI, ML & Chat boat-powered Interactive Robot Mascot (Chacha Chaudhary) would add value to the product for the river people connect component of Namami Gange. Prerequisites: It should be an independent robot to connect with the School children, the common man, and all stakeholders of NMCG for creating awareness & information dissemination. The product should be user- friendly & citizen-centric. Solution: An interactive robot named “Chacha Chaudhary” would be the Artificial intelligence & machine learning & chat boat-enabled mascot of the Namami Gange made with the help of a touch panel, greets visitors at the entrance and takes them along to each component of the Namami Gange flagship program in River Basin War Room & Ganga Museum. The digital avatar of Chacha Chaudhary would also enable on the NMCG website. Robot Mascot (Chacha Chaudhary) & digital avatar solution would be providing to actively engage with citizens to impart information, awareness, and education around riverine ecology in an interactive format of digital and outdoor installations. Sample Data Required: 1. https://nmcg.nic.in/ 2. http://cganga.org/scientific-advisory-committee/ 3. http://nihroorkee.gov.in/Gangakosh/ganga.htm 4. http://gangapedia.in/ 5. https://www.gangaaction.org/ganga-gyan-dhara-samgra-samvaad-workshop-for-clean-ganga/ 6. https://clap4ganga.com/

PB112	Projection of the extent of inundation corresponding to the forecasts of flood levels in a river.	Many states in India are regularly affected by flooding especially in monsoon season. Central Water Commission (CWC) issues flood warnings in all flood-prone districts based on the regularly measured water gauge level. Flood warnings are issued by CWC to the state administration, whenever the gauge levels cross the danger mark. In all such cases, the severity of the problem is essentially indicated in terms of flood levels. However, the major concern of the state administration is regarding the difficulty faced in assessing the spatial extent of flooding for mapping rescue and relief works. Large volumes of imagery corresponding to varied flood inundations are expected to be available with NRSA and other freely assessable sources. The past imageries corresponding to a specific forecast site can be collected and each imagery be stamped with the observed water level of that particular date and time. An AI-ML-based GIS application can be developed to process the available imageries for projecting new imageries using suitable interpolation/extrapolation of 2D information corresponding to specific flood levels within a given range. The participants of SIH are expected to develop the above-mentioned application using open-source software and demonstrate its utility for any one of the CWC' s forecast sites (List will be shared) with readily available imageries. Participants can also seek to add value by incorporating tools for making critical infrastructure, filtering outliers, pointing out accuracy levels of projected inundation, etc.
PB113	Use of Digital Technology in addressing Non-Revenue Water (NRW)	Water supply issues are related to sources and usage of raw water; intermittent water supply and the quality of tap water at the consumersÃ¢â‚¬â„¢ end. One of the major challenges facing is the high level of water loss in distribution networks. Non-Revenue Water (NRW) is defined as the difference between the amount of water put into the distribution system and the amount of water recovered from consumers. NRW is a good indicator of water utility performance; In addition, available NRW data are often found problematic, suspicious, inaccurate, or provide only partial information. Hence, there is a need to develop a system or technology to trace and tackle non-revenue water and convert it into revenue water using digital methods. This will save water as well as increase profitability and improves the return on investment w.r.t water distribution networks.

PB114	Use of Digital Technology to calculate water footprints for different daily use items.	The water footprint measures the amount of water used to produce each of the goods and services we use. The water footprint helps us understand for what purposes our limited freshwater resources are being consumed and polluted. The impact of it depends on where the water is taken from and when if it comes from a place where water is already scarce, the consequences can be significant and require action. The increase in the amount of non- available water due to pollution and scarce groundwater level has added more water footprints, at the community as well as at the personal levels. An increased water footprint directly affects the health and future of the citizens. Preventing severe drought in water-stressed areas is only going to be possible if water is used with more care and efficiency, this can be done if we have readily available data on water footprints. Hence by using digital technologies like AI, Big Data, Blockchain, etc, and computer languages, a user-friendly app or website may be developed which can provide the water footprints of different items/ final products we use in daily life by feeding little inputs or just by scanning through the camera like Google lens. The app should support local languages, this will ensure pan-India usage and sensitize the people about the water footprints of items they use in daily life.

PB115	Incentives based Design for onboarding Legal Service Providers such as Advocates, Arbitrators, Mediators, Notaries, Document Writers, etc on eMarket Place for extending Legal Services to Citizens in India	In India, the legal service sector is largely unorganized, making it difficult for people to access legal services. Many legal service providers, such as advocates, arbitrators, mediators, notaries, and document writers, operate independently and do not have a centralized platform to offer their services to clients. This leads to a lack of transparency, difficulty in finding the right legal service provider, and high costs for clients. Objective: The objective of this hackathon is to develop an incentivized design to onboard legal service providers on an eMarketplace to extend legal services to citizens in India. Solution: Participants are expected to design a platform that can onboard legal service providers on an eMarketplace and incentivize them to offer their services to clients. The platform should be user-friendly, secure, and transparent, and should address the following challenges: 1. How to incentivize legal service providers to offer their services on the platform? 2. How to ensure transparency and accountability in the services provided by legal service providers? 3. How to ensure the quality of legal services provided by the service providers? 4. How to ensure that clients can easily find the right legal service provider for their specific legal needs? 5. How to ensure that the platform is accessible to citizens from all socio-economic backgrounds? Participants can consider various models for incentivizing legal service providers, such as offering them bonuses, rewards, or other forms of recognition for their services. They can also consider gamification techniques to motivate providers to offer quality services and compete with each other on the platform. Additionally, they can explore ways to integrate the platform with other legal service providers and institutions, such as courts, legal aid clinics, and bar associations. Deliverables: The deliverables for this hackathon are a functional prototype of the e-marketplace platform, including wireframes, user stories, and a brief video demonstration of the platform's features and functionalities. The platform should be designed to address the needs of both legal service providers and clients and should offer a seamless user experience.

PB116	AI-powered Legal Documentation Assistant	Legal documentation can be a complicated and time-consuming process, especially for individuals and small businesses who may not have access to legal resources. In addition, the language and jargon used in legal documents can be difficult for non-lawyers to understand, which can lead to errors and misunderstandings. Objective: The objective of this hackathon challenge is to develop an AI-powered solution that can simplify legal documentation for individuals and small businesses in India, by automatically drafting legal documents in plain language and using easy-to-understand terms. Potential Features: 1. User-friendly interface for inputting relevant information such as parties involved, terms of the agreement, and other necessary details. 2. AI-powered document generation that automatically drafts legal documents in plain language and using easy-to-understand terms. 3. Ability to customize legal documents based on the specific needs of the user. 4. Integration with existing legal resources and databases to ensure accuracy and completeness of the legal documents. 5. Option for users to seek legal advice from an expert in case of complex legal issues. Impact: The proposed solution can greatly benefit individuals and small businesses in India, who often face challenges with legal documentation due to limited access to legal resources. By simplifying legal documentation, this solution can potentially save time, reduce errors, and increase access to justice. Data: Participants can use publicly available legal databases and resources to train the AI model for document generation. Deliverables: 1. A working prototype of the AI-powered legal documentation assistant, demonstrating its functionality and ease of use. 2. A presentation outlining the features and potential impact of the solution, as well as its technical architecture and data requirements. 3. Code and documentation for the solution, along with instructions for deployment and maintenance. Note: Participants are encouraged to consider the ethical implications of their solution and to prioritize data privacy and security.

PB117	Developing a Blockchain-Based eVault for Legal Records	The objective of this hackathon is to develop a blockchain-based eVault system for legal records that can ensure security, transparency, and accessibility for all stakeholders. The system should be able to store, manage, and share legal records securely and efficiently, with the potential to integrate with existing legal databases and case management systems. Requirements: 1. The eVault system should be based on a blockchain platform such as Ethereum, Hyperledger, or Corda, should use smart contracts to manage access, permissions, and transactions. 2. The system should have user-friendly interfaces for lawyers, judges, clients, and other stakeholders to interact with the eVault, with features such as uploading and retrieving documents, tracking changes, and sharing information. 3. The system should ensure the privacy and confidentiality of legal records, with appropriate access controls, encryption, and authentication mechanisms. 4. The system should allow for seamless integration with existing legal databases and case management systems, to ensure interoperability and ease of use. 5. The system should be scalable and adaptable to accommodate future changes and upgrades. Expected Outcomes: 1. A functional prototype of the blockchain-based eVault system for legal records, with a user-friendly interface and features such as document upload, retrieval, and sharing. 2. A detailed design document outlining the architecture, features, and technical specifications of the eVault system. 3. A business plan outlining the potential impact, market opportunities, and revenue models for the eVault system. 4. A presentation of the prototype, design document, and business plan. Impact: The development of a blockchain-based eVault system for legal records can have a significant impact on improving access to justice in India. It can lead to faster, more efficient court proceedings, reduced costs, improved data integrity, and increased trust in the justice system. Moreover, it can provide a secure and transparent platform for storing and sharing legal records, making it easier for clients to access their own records and for lawyers to access relevant case information.

		Access to legal information and awareness is a challenge for a large population in India, especially for those who are not literate or are from marginalized communities. There is a need to provide a user-friendly and easily accessible platform for legal awareness. Challenge: Develop a digital assistant that can provide legal information and guidance to people in a user-friendly manner. The digital assistant should be able to converse in multiple languages and provide information in a concise and easy-to-understand manner. The platform should be accessible through various devices, including smartphones, tablets, and desktop computers. The digital assistant should be able to address common legal queries, such as: 1. What are my rights as a citizen? 2. How can I file a complaint? 3. How can I access legal aid services? 4. How can I obtain legal documents? 5. What are the legal implications of a particular action? The digital assistant should also be able to provide information on various legal topics, such as family law, property law, labor law, and criminal law. Judging criteria: 1. Effectiveness in providing legal information and guidance in a user-friendly manner 2. Ease of accessibility through various devices and languages 3. Innovation in design and functionality 4. Potential for scalability and sustainability 5. Impact on improving legal awareness and access to justice for marginalized communities. Note: The Digital solution should be integrated with an all-encompassing framework of Know-Your-Rights, as described under Develop a comprehensive, accessible, and user-friendly Know-Your-Rights framework that will educate citizens in India about their legal rights, entitlements, and remedies. Background: Many citizens in India are unaware of their legal rights and often do not know how to seek redressal in case of legal violations. A comprehensive Know-Your-Rights framework can help citizens become better informed about their legal rights and help them navigate the legal system to seek redressal. Possible solution components: 1. Identification of relevant laws and regulations: Identify and compile all relevant laws and regulations that govern various aspects of citizensÃ¢â‚¬â„¢ lives in India. 2. Simplification of legal language: Simplify the legal language of these laws and regulations so that they are easily understandable by the common citizen. 3. Categorization of legal rights: Categorize these laws and regulations according to the legal rights they protect. For example, laws relating to labour rights can be grouped under one category, while those relating to consumer rights can be grouped under another. Indexing all the Laws of the Central Government and State Governments in India with auto- categorization of legal rights of respective types of beneficiaries such as tribals, senior citizens, persons with disability, etc., under the Know-Your-Rights Framework for India. 4. User-friendly design: Design an easy-to-navigate website or mobile application that is user-friendly and accessible to all. The platform should be designed keeping in mind the diverse needs of the users, including those with disabilities. 5. Interactive features: Incorporate interactive features such as chatbots, virtual assistants, and decision trees to make it easier for users to navigate the platform and find the information they need. 6. Regional language support: Ensure that the platform is available in multiple regional languages to reach a wider audience. 7. Collaboration with legal aid providers: Collaborate with legal aid

PB119	Tech-Driven Solutions for Undertrial Prisoners in India	To develop technology-driven solutions that address the challenges faced by undertrial prisoners in India, including legal aid, access to justice, and rehabilitation. Key features: 1. A mobile app that provides legal aid to undertrial prisoners, including legal representation, access to court proceedings, and legal resources. 2. A platform that connects undertrial prisoners with pro bono lawyers, legal clinics, and legal aid organizations including UTRCs for bail process. 3. A rehabilitation program that uses technology to provide education, vocational training, and mental health support to undertrial prisoners. 4. A dashboard that tracks and monitors the status and progress of undertrial prisoners, providing real-time information to lawyers, judges, and prison authorities. 5. A virtual platform that allows undertrial prisoners and the support-persons to access the awareness of rights and various provisions of UTPs and thereby improving access to justice. Deliverables: 1. A functional prototype of the technology-driven solution that addresses the challenges faced by undertrial prisoners in India. 2. A comprehensive business plan that outlines the feasibility, sustainability, and scalability of the proposed solution. 3. A pitch deck that effectively communicates the problem statement, solution, and impact of the proposed solution. Expected impact: 1. Increased access to legal aid and representation for undertrial prisoners, leading to a more equitable and fair criminal justice system in India. 2.Improved rehabilitation outcomes for undertrial prisoners, reducing recidivism rates and promoting social reintegration. 3. Increased transparency and accountability in the criminal justice system, reducing the number of undertrial prisoners languishing in jails. 4. Increased collaboration between legal and tech experts, leading to innovative and impactful solutions for social justice.

PB120	Development of gamified platform on Children's Rights to increase legal literacy and awareness among children in India	To create a fun, interactive, and engaging gamified platform that educates children in India about their rights and empowers them to stand up for themselves and others. Target audience: The platform is intended for children between the ages of 8 and 16, and will be designed to be inclusive and accessible to all children regardless of their socio-economic background, gender, or other demographic factors. Key features: 1 Interactive gameplay that is based on real-life scenarios and challenges related to child rights, using storytelling, visualizations, and immersive experiences to educate children on their legal rights and procedures. 2. Modular and adaptive learning modules that provide progressive and personalized learning paths, catering to individual user needs and preferences. 3. Accessible and user-friendly design, incorporating multimedia elements and language translation features to promote inclusivity and accessibility. 4. Social and community features enable children to connect and collaborate with other users, legal experts, and organizations, creating a sense of community and empowerment. 5. Integration with child rights organizations and support services, enabling children to access legal advice and assistance as needed. Deliverables: 1. A functional prototype of the gamified platform, demonstrating key features and functionality. 2. User testing and feedback data, indicating the effectiveness and usability of the platform. 3. A comprehensive report and presentation on the development process, including design decisions, technical challenges, and ethical considerations. Expected impact: 4. Increased legal literacy and awareness among children in India, enabling them to make informed decisions about their rights and responsibilities. 5. Empowerment of children to stand up for their rights and the rights of others, leading to greater social justice and equity. 6. Enhanced engagement and participation of children in legal processes and systems, leading to more effective and equitable outcomes.
PB121	Development of e-Portal for facilitating Case Management Hearing of various types of cases	Case Management Hearing, known as a Pre-Trial Conference" in other jurisdictions"

PB122	Development of software for streamlining the listing of cases through Differentiated Case Flow Management	Cases differ substantially in the time required for a fair and timely adjudication, not all cases make the same demands upon judicial system resources. Thus, they need not be subject to the same processing requirements. The concept of Case Flow Management for High Court and Subordinate Courts was first introduced through the judgment of the Supreme Court of India in the case of Salem Advocate Bar Association v. Union of India, following which the Model Draft Rules were proposed by the Law Commission, Jagannadha Rao Committee, wherein model case management rules endorsed by the Supreme Court also containing timelines for different case types, the upper limit of which is two years were proposed. Problem Statement/Challenge: Computerization has failed to improve the case scheduling process. However, solving some administrative problems through the aid of technology could reduce the constraints under which judges work and ensure the timely listing of cases thus aiding the speedy disposal of cases. A 'Differentiated Case Flow Management(DCM) system would enable a court to prioritize cases and the recognition that many cases can and should proceed through the court system at a faster pace than others if appropriate pathways are provided. Objective/Expected Outcome: Under a DCM system, cases do not wait for disposition simply on the basis of the chronological order of their filing. This would greatly aid in minimizing and making more predictable the time between case events more and aid efficient disposal of cases.
PB123	International Comparative System to Launch Integrated Real-Time Data Management System (IDMS) for Chemical and Petrochemicals Sector.	Most of the Countries collect information/ maintain inventory on the Chemical and Petrochemical sector for monitoring and policy making to improve this sector. There is standard practice for data collection for those countries who are the member of the United Nations Statistical Commission (UNSC) and other countries. D/o Chemicals and Petrochemicals, M/o Chemicals and Fertilizers are desirous to make a Web Based Application/ Portal to develop an Integrated Data Management system (IDMS) for the Chemical and Petrochemicals Sector. The main goal is to design an integrated data management that would gather, store and share information about various facets of the chemical and petrochemical industry including market standards as well as allow for mapping all relevant data to automate different fields of chemicals and petrochemical sector for the Govt. of India. With the designed system, the specific data variable needs like advanced product search and comparison, technical data sheets generation, and creating a solid data management platform for true collaboration of different countries information.