



V-TechSEED Projects on Smart Vehicles

Project No.	1
Company type	Industry Personnel
Organization	ABB GIS Pvt Ltd
Problem statement title	Big Data challenges for the e-Mobility
Category	Software
Technology Bucket	Smart Vehicle
Complexity	Simple
Description	An EV user must be assured that power will be available when needed especially in an unfamiliar area. A route optimization approach based on Machine Learning needs to be considered to ensure that vehicle drivers are led to the nearest or their preferred e-Station.
You tube Link	https://www.youtube.com/na

Project No.	2
Company type	Industry Personnel
Organization	ABB GIS Pvt Ltd
Problem statement title	Big Data challenges for e-Mobility- infra operator
Category	Software
Technology Bucket	Smart Vehicle
Complexity	Simple
Description	The E-Charging Operators (equivalent of today's petrol pump operators) need a Big Data approach to ensure their customers (end-users) satisfaction and optimum utilization of the e-Charging stations. The operator may have fast or slow charging infrastructure with their own payment terms and timings. Based on a data-centric approach the operator can offer dynamic pricing at stipulated times and manage the peak demand accordingly.
You tube Link	https://www.youtube.com/na

Project No.	3
Company type	Industry Personnel
Organization	MindTree
Problem statement title	Driver alertness detection
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	A lot of deaths happening are because of road accidents. So to prevent these accidents, a driver alertness detection system must be made.
You tube Link	https://www.youtube.com/watch?v=r39Uo2LnV90&featur

Project No.	4
Company type	Industry Personnel
Organization	Mahindra&Mahindra(FarmEQ)
Problem statement title	Pedestrian Safety Device in automobiles
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	Pedestrian death rates are amongst the highest in India as Jaywalking is very common. There is no system integrated with vehicles to detect and prevent this. All safety features currently focus on the occupants of the vehicle. Availability of such a driver assistance system would significantly take down instances of fatal accidents involving pedestrians. It would identify when a jaywalker/bystander moves in the path of the vehicle and instantly deploy measures to evade or brake.
You tube Link	https://www.youtube.com/watch?v=_UOHwpQwMQE

Project No.	5
Company type	Industry Personnel
Organization	Mahindra&Mahindra(FarmEQ)
Problem statement title	Parking Spot indicator in vicinity
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	India is the world's fourth largest automobile market with limited parking spots. Ever-growing number of vehicles causes traffic congestion on most streets and roads. Availability of a low cost connected ecosystem will help identify the nearest parking spot when sought. This will resolve issues related to parking as well as reduce traffic jam instances caused due to improper parking situations.
You tube Link	https://www.youtube.com/watch?v=-5k45dmKhzg

Project No.	6
Company type	Industry Personnel
Organization	Mahindra&Mahindra(FarmEQ)
Problem statement title	Low Cost Digisense Platform: Change Driving Habits
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	We have very erratic driving patterns on the road and it causes lot of fuel wastage and is a major cause of accidents. A low cost system(under 15\$) which can integrate with any car and provide a summary of driving habits of each car owner/driver will help us track usage, plan routes and monitor the health of the vehicle real-

	time. We can then suggest users to modify their driving habits to control spending on fuel, breakdown alerts and to practice proper road etiquette.
You tube Link	https://www.youtube.com/watch?v=sDk9Pn49vgc

Project No.	7
Company type	Industry Personnel
Organization	Hero Electric Vehicles
Problem statement title	Parallel BMS
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	Conventional Lithium –ion battery packs of 1 to 3 KWhr are connected in parallel and series of cells to achieve 48 V required for e-scooter and e-rickshaws. This limits the number of cells to be used and leads to costly Battery management system. A few weak cells reduce the performance of the full battery pack. Participants to develop a new concept of which will integrate boost convertor from 3.7 V to 48 V rated voltage and also integrate motor controller function.
You tube Link	https://www.youtube.com/watch?v=P4dR5SXemxY&feature

Project No.	8
Company type	Industry Personnel
Organization	Hero Electric Vehicles
Problem statement title	Mobile App for Rental Battery
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	This requires advance BMS development for locking and unlocking the Lithium ion battery BMS on basis of monthly payment by customer. The battery operating vital parameters to be stored in cloud for later retrieval during maintenance. Participant to develop logic and the embedded system for battery capacity from 1 to 3 KWhr purchase on lease instead of one time investment in lithium battery. This will promote E-mobility solutions over conventional fuel scooters.
You tube Link	https://www.youtube.com/watch?v=Bd5TUwid5gE&feature

Project No.	9
Company type	Industry Personnel
Organization	Hero Electric Vehicles
Problem statement title	Power Train Optimization
Category	Software

Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	BLDC motor known for high power density design and high efficiency. As the speed of the vehicle increases the motor becomes inefficient due to increase in losses. Scooter motor is in range of 500 to 3000W for 25 to 60 kmph speed application. Participant to derive at most efficient combination of motor sizes, hub motor versus transmission driven off hub motors for improved torque-speed characteristics, arrive at controller design for cater low and high vehicle speeds. This involves motor design.
You tube Link	https://www.youtube.com/watch?v=yJB_L0wWr40&feature

Project No.	10
Company type	Industry Personnel
Organization	Maruti Suzuki India Ltd.
Problem statement title	Stop Noise pollution from honking
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	'Indian Roads are very Noisy due to various road users and congestion factors., its a custom in India to paint Truck Rear with message " BLOW HORN". Honking is a habit and people like to install various types of horn to generate discrete audible noise. Horn blowing leads to noise pollution and creates a chaotic environment. Horn is a device to be used in emergency and if it is used repeatedly in very short succession then there should be system having the following features :: - recording the no. of times a horn is pressed by the driver & this should be further linked with driving capability which in turn should be used to calculate insurance premium / permit charges for taxi, etc..'
You tube Link	

Project No.	11
Company type	Industry Personnel
Organization	Ericsson
Problem statement title	Operational maintenance of critical vehicles using AR/VR
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	One of the important aspects of day –to-day life is transportation and there is a huge surge in the number of accidents every year due to improper maintenance or negligence of the vehicle conditions. Human errors during inspections are another major concern. Hence to improve the quality of testing of vehicles, we need to come up with a solution that could detect anomalies in vehicles due to operational negligence. Operational maintenance today are being

	done based on visual human inspections and manual devices which are prone to errors. We require an Augmented Reality (AR) based application that could improve the quality of testing in vehicles thereby not overlooking the minor displacements. With the usage of AR applications, one should be able to identify and recognize any damage to physical parts of a vehicle which would enable personnel to perform operational maintenance. Image recognition could be used to distinguish between damaged parts with respect the initial state. Input: Input would be a data set containing labelled images of damaged parts in vehicle and new vehicles of the similar make. Output: AR to identify the defective vehicle parts given an image of a vehicle.
You tube Link	

Project No.	12
Company type	Industry Personnel
Organization	Cyient
Problem statement title	Motor Vehicle Emission Reduction
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	It is a known fact that the traditional, internal combustion engine based vehicles generates lots of emissions which are bad for health and environment. To overcome this, there is a lots of development already happening in the electric vehicle and hybrid vehicle technologies. It will be good if we can develop a system which will filter pollutant gases from the vehicle emission. This system also can be retrofitted into existing vehicles so that they are less polluting.
You tube Link	

Project No.	13
Company type	Industry Personnel
Organization	Tata Motors
Problem statement title	An Open sourced Motor Controller for Hybrid Veh.
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	Due to openness of “Raspberry Pi”, a powerful computer, and it’s low cost, it is used extensively in many Industries and across innumerable applications. On similar lines, we want to create an “Open Motor Controller” which can be used in hybrid vehicles at low cost. Components, Building blocks and even Sub-assemblies are available in the open market but the challenge is to integrate them, package them in a box and make it an ECU with requisite physical and electrical protection.
You tube Link	https://www.youtube.com/watch?v=fy36dSYG0PU

Project No.	14
Company type	Industry Personnel
Organization	Tata Motors
Problem statement title	Vehicle Consumables Prognostics
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	Can we devise a novel solution for vehicle owners where they are able to take an informed decision on whether to replace the consumables with respect to its remaining useful life while also considering the effect of not changing it within a specified time? Some of these consumables are: 1. Air Filters 2. Oil Filters 3. Engine Oils 4. Tires 5. Clutch plate 6. Brake Liners 1. You can choose to take up any one of the consumables listed above. 2. Go beyond putting sensors. 3. Low cost.
You tube Link	https://www.youtube.com/watch?v=cUUOan_wHvY

Project No.	15
Company type	Industry Personnel
Organization	Tata Motors
Problem statement title	Intelligent Battery Management
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Simple
Description	Have you ever been left stranded with your vehicle because it just wouldn't start? Many a times this is due to the battery of the vehicle, more specifically either its state of charge (SOC) or its state of health (SoH). The challenge is to devise a user friendly APP based Battery Management Tool through which the user can get the critical information about the SoC as well as the SoH along with the set of actions required to ensure a reliability of starting is maintained.
You tube Link	https://www.youtube.com/watch?v=HQZKRmubeeE

Project No.	16
Company type	Industry Personnel
Organization	Tata Motors
Problem statement title	Intelligent trip management for Electric Vehicles
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	The biggest anxiety of any electric vehicle owner (Bikes, Cars, Buses and Trucks) is the range they can derive out of a single charge, essentially because of the limited opportunity to charge the vehicles available today. In this context the challenge is to develop a smart algorithm (a complete simulation model) which takes all the noise factors of the outside environment (e.g. via open APIs) and uses it to manage (via a control logic)

	the vehicle parameters to ensure optimal battery utilization
You tube Link	https://www.youtube.com/watch?v=kwNJhKhFxmo

Project No.	17
Company type	Industry Personnel
Organization	Tata Motors
Problem statement title	The Mobility Challenge
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	<p>The Challenge is to develop a system to gather anonymized data of people's movement (no privacy infringement) in a City and then suggest a use-case of how this data can be used to improve any or all of the following attributes of mobility:</p> <p>1.The need for mobility: Analysis of mass movement across long distances.2.The Efficiency of moving from A to B: 3.The discovery of demand patterns for specific modes of transport.4.The carbon footprint trails.5.The safety of travel.6.Out of Box Insights.</p>
You tube Link	https://www.youtube.com/watch?v=JvHtV2Smuu0

Project No.	18
Company type	Industry Personnel
Organization	KPIT
Problem statement title	Automatic Pothole detection while driving
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	<p>Every year we lose more than 1 lakh lives on Indian roads due to accidents and the proportion of these accidents due to pot holes on the road is quite significant. If these pot holes can be detected in real time while driving, it will benefit two wheeler riders by avoiding it especially when the pot holes are covered by water during monsoon.</p>
You tube Link	

Project No.	19
Company type	Industry Personnel
Organization	ARAI
Problem statement title	Ensure safe driving distance in adverse conditions
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	<p>Many of the frontal collisions on highways are due to slow response of drivers and not many systems are in place to warn the driver about an impending frontal collision. In addition to this, during adverse</p>

	weather conditions the visibility gets affected, which affects the sensor and the system responses. The participants shall develop the system (architecture and software) using cost effective sensors to ensure safety of the host vehicle while driving on highways.
You tube Link	https://www.youtube.com/watch?v=YvYIDIGf6QI&feature

Project No.	20
Company type	Industry Personnel
Organization	ARAI
Problem statement title	Online Prognostic System of key vehicle component
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Simple
Description	Accidents in heavy commercial vehicles occur mainly due to the failure of Drivetrain system, chassis, brakes and tires. To avoid breakdown of the above mentioned systems, the participants shall develop software algorithms for online prognostics to monitor the health of the above systems. The typical components that can be considered for the demonstration purposes are ‘Drive Shaft, Axle, Brakes and Tires’.
You tube Link	https://www.youtube.com/watch?v=GgfkGahPlxs

Project No.	21
Company type	Industry Personnel
Organization	KPIT
Problem statement title	Economical and reusable Thermal Management of components in electrical transport systems.
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Simple
Description	There is heat generation from components and subsystems like motor, energy storage other power electronics subsystems. We need to maintain the temperatures of subsystems in optimum range by rejecting heat to environment. We are looking for smart solutions where we can effectively control the temperature of components in optimum range with reuse of the rejected heat.
You tube Link	

Project No.	22
Company type	Industry Personnel
Organization	Kokuyo Camlin
Problem statement title	Tracking Board for unsafe act
Category	Hardware
Technology Bucket	Security & Surveillance
Complexity	Simple

Description	1) Safety issue . Need to have common software which will check following points and generate alarms for quick action to have safe environment of factory . a) In pressure vessels (Air, hydraulic Oil , Water etc), If pressure cross designed Limit and not stopped , need to generate alarm by dashboard and can be stopped . (Like air compressors , Vacuum pump, Pressurized fire lines) b) In factory , Noise level limits are defined , If that cross alarm must be generated through same dashboard c) Air monitoring for pollution inside the factory premises , can be seen into same dash board d) Electrical panels temp to be monitored and real time tracking can be seen and temp above defined limit should generate alarm . e) Excessive vibrations of Machines also to be tracked and alarm to be given .
You tube Link	

Project No.	23
Company type	Industry Personnel
Organization	Garden Reach Shipbuilders
Problem statement title	Autonomous navigation system for pilotless manoeuvring of vessel through restricted waters.
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Simple
Description	During entry/exit of a vessel at harbour or during navigation through restricted waters, a team of experienced personals are deputed to handle the critical job. Any small human mistake may lead to a disastrous maritime accident as many a times depicted in maritime history. To prevent this an autonomous navigation system may be created for vessels navigation through restricted waters. At land, the technology of driverless car have been introduced which can handle itself in traffic, narrow roads and consists of automatic guidance system. Scope: A same concept can be utilized in naval scenario where in the future the ships can enter or leave harbour / navigate through restricted waters autonomously at higher speed and with zero error, even in relatively uncharted waters.
You tube Link	

Project No.	24
Company type	Industry Personnel
Organization	GoldmanSachs
Problem statement title	Transport Management System for Intra-City travel
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	Public commute such as buses and metro don't have useful information. For example, if in-city buses had a system with information about the exact number of standing and sitting seats in the next metro or bus, then it would make using public transport very

	<p>easy and amiable for citizens. Assuming sensor data for seating is available on each vehicle and the vehicles can transmit data between each other, devise an algorithm that can tell users which vehicle to take. Devise relevant analytics to help the authorities realize whether to increase the frequency/passenger capacity of bus/metro in real-time at certain stops could also be included in the system. Inputs to the application:</p> <ul style="list-style-type: none"> - Static Input (doesn't change frequently) <ul style="list-style-type: none"> o Route names of DTC buses and their stoppage on that route o Bus Make (Number of standing/sitting seats) - Dynamic Input (changes real-time) <ul style="list-style-type: none"> o For every stop – no. of passengers boarded and de-boarded (Can be inputted by the bus staff) <p>Outputs of the application: Real-time information about the bus with its seat availability information (number of vacant sitting/standing seats). The application is expected to show the bus going on a static pre-defined route with number of standing/sitting seats.</p> <p>Future Optimizations:</p> <ul style="list-style-type: none"> - User information like their boarding point and destination can be inputted - The number of boarding/deboarding passengers can also be inputted by beacons/RFID tags/thermal measure installed on the bus - Destination info about each passenger boarding the bus so that a bus doesn't have to stop at every bus stop and a user can determine if the bus will reach their destination in the shortest possible time <p>STATIC INPUT: ROUTES: This table shows 2 of all the available routes in the city.</p> <table border="1"> <tr><td>100UP</td><td>100DOWN</td><td>STOP 1</td><td>Kendriya Terminal YMCA</td></tr> <tr><td>STOP 1</td><td>STOP 2</td><td>North Avenue</td><td>Gurudwara Bangla Shahib</td></tr> <tr><td>STOP 2</td><td>STOP 3</td><td>RML Hospital</td><td>RML Hospital</td></tr> <tr><td>STOP 3</td><td>STOP 4</td><td>Gurudwara Bangla Shahib</td><td>North Avenue</td></tr> <tr><td>STOP 4</td><td>STOP 5</td><td>YMC</td><td>A</td></tr> <tr><td>Kendriya Terminal</td><td>STOP 5</td><td>BUS MAKE:</td><td></td></tr> </table> <p>FOLLOWING SHOWS 2 TYPES OF ALL AVAILABLE BUSES</p> <table border="1"> <tr><td>A</td><td>></td><td>15 Standing Seats, 10 Sitting Seats</td></tr> <tr><td>B</td><td>></td><td>18 Standing Seats, 15 Sitting Seats</td></tr> </table> <p>DYNAMIC INPUT: Based on the input done by the driver, every bus has a last stop & available seats. Input will be number of passengers boarded and de-boarded</p> <p>Boarded : 5 De-boarded: 3</p> <p>OUTPUT: The User will input his/her pre-defined route in the app and his boarding point. Based on location of all the buses which have crossed the last stop in that route, it will show the number available seats assuming that sitting seats are taken before the standing seats.</p> <table border="1"> <tr><td>100UP Available Standing/Sitting Seats</td><td>100DOWN Available Standing/Sitting Seats</td></tr> <tr><td>STOP 1 Kendriya Terminal</td><td>10 Standing, 2 Sitting YMCA</td></tr> <tr><td>15 Standing, 10 Sitting</td><td>STOP 2 North Avenue</td></tr> <tr><td>8 Standing, 2 Sitting Gurudwara</td><td>Bangla Shahib</td></tr> <tr><td>9 Standing, 7 Sitting</td><td>STOP 3 RML Hospital</td></tr> <tr><td>9 Standing, 3 Sitting RML Hospital</td><td>13 Standing, 6 Sitting</td></tr> <tr><td>7 Standing, 5 Sitting North Avenue</td><td>STOP 4 Gurudwara Bangla Shahib</td></tr> <tr><td>10 Standing, 3 Sitting</td><td>7 Standing, 5 Sitting North Avenue</td></tr> <tr><td>STOP 5 YMCA</td><td>15 Standing, 10 Sitting Kendriya Terminal</td></tr> <tr><td>18 Standing, 13 Sitting</td><td>18 Standing, 13 Sitting</td></tr> </table>	100UP	100DOWN	STOP 1	Kendriya Terminal YMCA	STOP 1	STOP 2	North Avenue	Gurudwara Bangla Shahib	STOP 2	STOP 3	RML Hospital	RML Hospital	STOP 3	STOP 4	Gurudwara Bangla Shahib	North Avenue	STOP 4	STOP 5	YMC	A	Kendriya Terminal	STOP 5	BUS MAKE:		A	>	15 Standing Seats, 10 Sitting Seats	B	>	18 Standing Seats, 15 Sitting Seats	100UP Available Standing/Sitting Seats	100DOWN Available Standing/Sitting Seats	STOP 1 Kendriya Terminal	10 Standing, 2 Sitting YMCA	15 Standing, 10 Sitting	STOP 2 North Avenue	8 Standing, 2 Sitting Gurudwara	Bangla Shahib	9 Standing, 7 Sitting	STOP 3 RML Hospital	9 Standing, 3 Sitting RML Hospital	13 Standing, 6 Sitting	7 Standing, 5 Sitting North Avenue	STOP 4 Gurudwara Bangla Shahib	10 Standing, 3 Sitting	7 Standing, 5 Sitting North Avenue	STOP 5 YMCA	15 Standing, 10 Sitting Kendriya Terminal	18 Standing, 13 Sitting	18 Standing, 13 Sitting
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Project No.	25
Company type	Industry Personnel
Organization	Mahindra Electric

Problem statement title	1. Intelligent Range Estimator 2. EV Smart Charging App 3. Universal EV Charging Adaptor
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	<p>1. Intelligent Range Estimator with Real Time Traffic Information Description: In case of EV, the range of the vehicle is the most important and critical information for the customer, which is influenced by the various factors like driving & usage patterns, operating environment and traffic conditions. By utilizing the real time traffic information, drive profile, and environmental conditions, an accurate prediction of algorithm to be developed to address the range anxiety.</p> <p>2. Smart Charging App for EV Description: The major challenge of Indian EV customers is the lack of Charging Infrastructure and its integration into a common App. Smart Charging App developed on to a smart phone either using Android or IOS is to automatically identify the utility provider (charging station) along with rate cards within the specified zone. This is to reduce the wait time for EV charging by reserving the slot in advance. It is also used as a secured payment gateway.</p> <p>3. Universal EV Charging Adaptor Description: Around the globe there are multiple charging protocols and standards followed for EV charging. CHAdeMO, IEC CCS, Bharat Charge Protocol-BCP and GBT are the few dominant fast charging systems. They are not interoperable. The objective of this project shall be to develop a universal EV charge hardware to be used with a vehicle having any of the referred standards. Charge the vehicle having any charging communication protocol.</p>
You tube Link	

Project No.	26
Company type	Industry Personnel
Organization	BEML
Problem statement title	Variable Speed Transmission Device for Mechanical Power Train
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	<p>Majority of the mobile machinery used in Road and Off Road applications have a mechanical power train transmitting power from engine to wheels or track. Mechanical power train typically consists of main clutch / torque converter, gear box, differential, final drive. The gap between the torque and speed required at the wheels vs the torque and speed generated by the engine is bridged by the elements of power train. Power train components occupy volume inside the vehicle and also contribute for the weight while the transmission efficiency impacts the overall fuel efficiency of the vehicle. Power is drawn from the engine to drive the fan for cooling the heat generated in engine, transmission and hydraulic system, etc. Innovative power</p>

	train concepts which can facilitate power transmission in heavy machinery like mining dump trucks are being solicited. The project is to propose alternative drive train concept for BEML make 100ton dump truck. The prime mover continues to be Engine and innovative solution is being looked at for the power train. Alternative concept should meet or exceed the drive performance requirements of the current power train while innovatively be able to reduce weight / volume and offer enhanced efficiency.
You tube Link	

Project No.	27
Company type	Industry Personnel
Organization	Bridgestone
Problem statement title	utomation in Tire Visual Inspection
Category	Software
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	Inspection Process:- 1. Qualified Inspector performs the visual inspection of each tire for checking defects. (> 100 types of defects). He confirms appearance Quality of the tire based on Global Standards. Inspection time of tire (inside and outside area) is around 32-37 sec (based on the tire size). Problem Challenge:- Manual Inspection depends on Inspector 's skill and there are chances of missing defects. Solution Required:- Automated System in which Tyre is scanned by an artificial Eye (Camera). After scanning, Output will be compared with the defect specifications and judgement of OK /NG Tires will be done.
You tube Link	

Project No.	28
Company type	Industry Personnel
Organization	BEML
Problem statement title	Electric Drive System for Excavators for Inner City Applications
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	Electric Drive Systems are being adopted on Hydraulic Excavators which are typically powered by Diesel Engine and power is transmitted through hydraulics. This is specially relevant in view of zero tolerance for emissions while working in city limits. Electric Drive Excavator aims at eliminating the diesel engine and will be driven by electric motor. BEML make 7.5 tons class hydraulic excavator to be bench marked for proposing the electric drive concept. The excavator should be capable of working with or without a trailing power cable and should be capable of continuous operation for four hours without getting charged.

You tube Link	
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Project No.	29
Company type	Industry Personnel
Organization	Yamaha Motor Solutions India Pvt. Ltd.
Problem statement title	Bike Crash Detection
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	Device which can send the SOS signal on crash of vehicle to the centralized command center.
You tube Link	

Project No.	30
Company type	Central Ministry
Organization	ADIRE-Smart Village, Jahangirabad, Cuttack
Problem statement title	Development of Solar energy powered service delivery vehicle
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	Service delivery vehicle are in great demand now a day. These vehicles use high amount of fossil fuel. So, there is a need to replace this conventional source of energy to solar power which can be manufactured and used by MSMEs. Solar electric service delivery vehicle with wireless charging is also another approach which can help MSMEs
You tube Link	

Project No.	31
Company type	Central Ministry
Organization	Himalyan Chamber of Commerce
Problem statement title	Truck Weighing based on the suspension of the vehicle
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	After the introduction of GST, MSMEs are facing hardship in filling the returns for GST, e-way bill etc. due to their computer illiteracy. Also, many of the MSMEs are not having computer system and operators to comply with its requirements. It is suggested to develop a user friendly mobile app which can be used by the MSMEs for the purpose.
You tube Link	

Project No.	32
Company type	Central Ministry
Organization	Consultant & Professor, DIT University, Dehradun
Problem statement title	Hydrogen as fuel in Automobiles
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	A fuel cell-powered vehicle with an engine powered by compressed hydrogen, is like any other electric vehicle but uses hydrogen instead of a large, heavy battery for energy. These innovative vehicles are considered much safer than regular gasoline-powered automobiles. Rather than noxious, poisonous exhaust, a fuel cell vehicle emits only water vapor
You tube Link	

Project No.	33
Company type	Central Ministry
Organization	Min. of Coal
Problem statement title	Heavy Earth Moving Machinery Monitoring
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	Different parameters of (Heavy Earth Moving Machinery) HEMM like engine oil pressure, water temperature, the air pressure in the brake, hydraulic oil pressure cannot be monitored very effectively due to many uncontrolled reasons. This results in the breakdown of engines and consequent losses. A prototype is to be developed where all these parameters mentioned above will be reflected in a digital display panel. In case of any divergence, an alarm is to be generated. This control panel may be connected to the vehicle through GPS or any other method and to be kept at control room.
You tube Link	https://www.youtube.com/watch?v=-XMabuZlzs8

Project No.	34
Company type	Central Ministry
Organization	MSME-Development Organisation, Govt. of India, Ministry of MSME
Problem statement title	Creating prototype of electric two wheeler for reducing traffic noise & road congestion
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complex
Description	The large-scale adoption of electric two-wheelers can reduce traffic noise and road congestion but may necessitate adaptations of the existing urban infrastructure and safety regulations. Most electric

	vehicles today use an electric battery, consisting electrochemical cells with external connections to provide power to the vehicle. Battery technology for EVs may be developed.
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Project No.	35
Company type	Central Ministry
Organization	MSME DEVELOPMENT INSTITUTE DELHI
Problem statement title	Portable light weight wheel chair
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	A portable light weight wheel chair may be developed for physically handicapped persons
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Project No.	36
Company type	State Ministry
Organization	Robert Bosch Engineering & Business Solutions Private Limited
Problem statement title	Smart garbage vehicles and push carts
Category	Hardware
Technology Bucket	Smart Vehicles
Complexity	Complicated
Description	The garbage collection process is tedious, inefficient and time consuming. The process involves manual monitoring and there is no tracking mechanism for the garbage carrying vehicles and garbage load. A new system can be developed to monitor the garbage vehicles in a particular ward of a corporation to obtain optimization in terms of route and garbage collection. The garbage vehicles and push carts can be fitted with sensors and based on the GPS location, the vehicles can be monitored to cover all areas of a ward. The vehicles should be compartmentalized for dry and wet waste to avoid the mixing of garbage. As of now the segregation of dry and wet waste is being enforced in many localities and the same should be followed while loading the garbage vehicles. The push carts used to collect garbage are not designed correctly, most of the garbage spills over the road during transportation. Battery operated carts can replace the existing push carts. In many cities of China, the point to point collection is done by battery operated vehicles and mostly driven by women. A node can be developed for a particular ward and monitored. A new app can be developed to help the citizens to locate the garbage vehicles and the timing of its arrival which helps in proper planning of disposal of garbage.
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