



**BHADALE GROUP OF COMPANIES
- IT AND REAL ESTATE**



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Research Ideas - details

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Introduction

Many fortune companies seek external partnership with startups and innovative firms that can contribute to their development. We have a list of projects that we have in our mind and these are real implementable projects. Due diligence and the hurdles faced for the implementations need to be studied before approaching a client to offer our research services. Below is the list of ideas we have prepared for sharing with prospective clients and sponsors. We are working on the implementation details and will share them once we look forward to go ahead with a set of shortlisted ideas that you are comfortable to sponsor or invest.

List of research ideas

Idea	Idea in brief
1	Solution Café – personalized co-working space for employment needs.
2	Integrated protocol stack for emerging technologies, a bundle of standard protocols
3	Food quality testers using AI for packed and open food items
4	Traveler's navigator kits using VR/AR/ AI/ML for better experience and avoiding dangers
5	Army suite: for integrated guidance (GPS, domestic + military signals, Google maps)
6	Integrated Healthcare systems using Wired / Wireless/ PAN / Smart building / Smart city
7	Remote Surgery – in situations like battle field and remote villages
8	Inkless paper – based on inkless writing pad, however here paper will be not a wax based.
9	Modern shopper's aid – using VR/AR and automatic checkouts.
10	Smart grid using AI / Fuzzy logic and a standardized universal system of V, I convertors
11	Transport and logistics tracking , shipment and monitoring for theft, loss, or damage
12	Robotic team for rescue operations – disaster management, detection and recovery of humans
13	Food originality tester of plastic rice, eggs and other food grade material for originality
14	Adaptive learning: Use of AI / ML in aiding kids to learn better
15	Resume shortlister AI agent: Use of AI /ML in scanning large standardized set of resumes
16	Farmer's aid: Use of weather patterns to forecast weather for farmers
17	Reservation aid: Scanning a list of bus/trains/ flight time tables and providing solutions
18	Driver's aid: Using Google maps and daily data feeds to update travelers
19	Vehicle Collision detector: Scanning of road ahead for say 100 meters and guiding drivers
20	Doctor's aid: Diagnosis of diseases for simple and complex diseases
21	Lawyer's aid: AI Lawyer that scans all rules, regulations, sections and assists lawyers/ judges
22	Trekking aid: Guidance for travelers related to camps, trekking, dangerous animals'
23	Disabled traveler aid: Blind navigator / GPS based navigator + personal assistant for the disabled
24	Health monitoring suites for the diseased that has probes and wireless connectivity
25	Resident aid: As part of Smart City plan, the city resident will be provided with several aids/ kits
26	Anti-theft detectors: This is for a business man to keep his online details safe
27	Personal security kit: This is for personal safety and safety of family, assets and kids
28	NLP translator: This is for international traveler who needs to response, in a different language
29	Personal defender kit: Warning and self defense kit for personal use
30	Digital twin for firms to help firms that need to get better performance
31	Digital twin for individuals for individuals who need alignment
32	Driver's vision aid that uses AR/VR and projects the enriched ambient settings for better driving

Sample Idea details

1. **Traveler's navigator kits** using VR/AR/ AI/ML: Kit that makes use of a server data about the current location of the traveler and provides additional data on the VR set, mobiles or any compatible gadget used by traveler. It will provide tips, hints, dangers and any guidance that traveler requests in real-time. A chat-bot will assist the traveler and also give advance warning of real and live threats from animals or strangers who might be robbers, terrorists or someone who can harm the traveler. It will add Google maps and even have emergency blind navigation kit, camp setting, shops, hotels and any aboriginal, native Indian camps nearby who can help in the jungle. Ground WAN Network, GPS links and walkie-talkie for local communications can be designed as special group kits to enhance the traveler experiences.

Number	Feature	Benefits
1	Traveler gets live and offline alerts, warnings, notices and helpful tips	Risks are reduced very much when compared to no use of the device
2	Traveler can interact with a chat-bot that has access to a large set of historical data, earlier incidents and most recent happenings.	User can get and send request hands free when they have a problem when climbing and need help
3	Traveler will be provided visual / audio aid and a replacement for a local guide when there is no person in the jungle or abandoned places	You are assured that you don't feel any shortcomings from a local help
4	Useful for workers like miners, historians and research workers trying to find hidden treasures by way of location based services, geological charts	Multi-purpose use and for specialized use help many related professionals
5	Industry standards based AR and VR based headset, mobiles can enrich the journey and can bring back memories like that in the Jurassic park	You are assured you get the industry standards and compatible traveler kit
6	Emergency warnings related to low oxygen, wild animals, some threat from the primitives and incidents with aboriginals will be provided.	You get enriched information that will help you avoid danger zones, bad people and avoid risky incidents
7	In case of loss of NW and signals, the device with print out maps, useful phone numbers and mini-guide before the device turns off after battery is low	You stay informed even if there is loss of signal and something will always be available to help you to reach a safe point
8	Traveler will be in touch with their near-dears, police, doctors and for any key person they wish to contact if needed	This will help them feel at home and not in isolation and can boost your morale in your adventure

Technical details:

This can be an add-on module to existing mobile or a new device that serves the main purpose. In either case there will be hardware, software or network modules that will interact with suitable motherboards, chips and memory modules/APIs to capture and analyze current topography of the landscape under view. Based on the identified geography and historical significance, the server and other apps, NW will interact suitably to work with Google maps, historical libraries, popular map co-ordinates and their service (food, shelter, and hotel) and will co-ordinate the tour with the chat-bot and make suitable changes as per current landscape and co-ordinate. All the interfaces will be in synch and they provide a single truth to the traveler and also guide, assist and provide information that is needed. Under extreme conditions the devices will go into emergency mode and alert within few minutes of any major mishap or when panic button is pressed. All along use of VR/AR and GPS guided navigation, blind navigation will be provided. Based on date/time/ week and location, suitable suggestions for food, rest, nearby great locations will be provided. This is a travel guide, helper and emergency co-coordinator with base station. AI and ML will mainly be used by chat-bots to learn, adapt to situations, and give better and complex suggestions to traveler.

2. **Army suite:** for integrated guidance (GPS, domestic + military signals, Google maps) and self route updates + blind navigation. This suite will have navigators aided by GPS, Integrated command and control center radio channels, local walkie-talkie and use of other emergency kits for remote help and repair of equipments, injury and any other support related to ambient situations up to say 200 meters away. It can use the military grade GPS for precise target location and battle engagement. The suite will also have camping kit, food and medical kits for self-help, small surgeries and anesthetics, antibiotics and also shield guards against bio-chemical and nuclear fallouts and contamination. Body suites can have an alerting system that can be deactivated when silence is required.

Number	Feature	Benefits
1	Domestic + Military interfaces for ease of use, and no need to swap	Dual benefits and complimentary use; mitigating loss of signal risk
2	Large set of libraries to work with when no signals or networks are available	Use of offline pen drives, data drives and on demand local signal router for part of the active network will help some level of degraded operations however will not allow to be in a paralyzed state
3	Pre-planned mission and all devices have same truth and give precise guidance	This allows the army personnel to have trust and keep using the same data which have passed QA suitable for use
4	Chat-bot, AI / ML to interact with large backend servers and download of current location and strategy; good for next 200 kms or for a day's mission.	Interactive, adaptive and informative all provided using AI agents good for your one day trip avoiding any surprises
5	Safe fallback solutions and return to base camp in case there is a serious threat	Failbacks are popular to bring you back safely and the plans are sound and this helps you return from an adventure and

		avoid any serious threats
6	Guidance for other nearby locations in enemy camp that can pose threat or presence of traps / landmines etc	Signals that can see through nearby enemy areas and scan for mines, traps and any dangerous formations that will warn you beforehand
7	Medical kit, bio-chemical, nuclear sensors and warning systems, that will help avoid or take shelter at a safe location or bunker	These are optional from the primary kits and help you work with the AI kit that can have a surgery robot, related medicines etc
8	Data related to enemy positions and counter attack that can be used to penetrate deep into enemy set target location.	This intelligence of near-by enemy locations can help you guide alternate to using GPS and local network signals
9	Live updates from base, GPS satellites, other known towers and warnings for incoming unknown signals and EMI , magnetic power beams	On demand- networks, and data helps you to identify known/unknown signals and also help you from viruses and EM traps

Technical details:

This will be an add-on module to existing military grade fabric and clothing. We will add the necessary electronics and software apps to enrich the same. It will interact with various feeds both domestic and military grade signals and other utility signals from GPS, IoT devices, LAN, WAN, PAN and MAN all integrated into a single truth to make sense for the military to take precise decisions on the mission, scope and limiting damage to innocents. The gadgets can stop all operations; hibernate in case enemy is getting the signals. All possible security, encryption and loss will be avoided and a true military color will be provided. The kit will work as standalone in case there is a need to switch off from the network and blind navigation is made possible with low power devices and having highest lumens and low contrast viewing that can be tailored to unique needs of a soldier. A mini-Expert system with a library of AI/ML that can adapt to new and hostile situation will be provided so that the AI knows what, how much ammunition is available and where, how the target can fire back. This will help make surprise attacks not know to target and great ambush can be set. This kit will work like a chess-board game and will try to increase win ratio based on target engagement even if it is a big fighter plane or an army tank. All these come along with other standard offerings for food, water, tent, medicines, small surgery kit etc that a soldier can carry along and make best use of the inventory at the best possible way. A war game/ plan can also be set based on the mission given to soldier and that can be updated live and command room gets all the feedback.

3. **Remote Surgery** – in situations like battle field and remote villages. This is a robotic arm that can be carried along with the Army suite. This can be plugged into a laptop or even at an Army base camp station bay where surgeons can attend to the small surgeries remotely. This arm will be of industrial grade and will have accurate precision and the operation will be as good as done locally. However now there will be no operation table, only a bed or a camp wall where the patient is being attended. Suitable certification for precision and assurance will be provided as required.

Number	Feature	Benefits
1	Industrial grade devices, rugged for battle field	Industry standards and precision helps you get the best and avoids any surprises
2	Compliant to Industry 4, IoT, Low Energy devices, latest protocols like Zig Bee, LAN, WAN networks, datacenter protocols, API integration	Integrated technology to help you get the best from it
3	All parts and services will be compliant at international standards like ISO, HL7 etc	Medical industry standards help you get the best for your treatment
4	Precision within mm range suitable for remote operations	Accurate and as precise as surgeons hands
5	Live feeds and auto corrections before taking the next step, locks down with most precise move	Fuzzy control helps recover from errors and helps in doing the same thing as done by surgeon to ensure you get the correct operations
6	Integrated, inbuilt surgery tools, and cues for attending nurse or soldier, can choose the parts as per the tasks in hand.	The cues help a non-qualified professional to follow steps to start and progress the remote surgery
7	Pre-planned, well configured, well set path and fall back solutions are in place and local nurse can interrupt the operation if she feels something is going wrong.	Manual override feature helps any mishaps
8	Remote camera can help remote doctor to see and correct his steps.	A visual aid for remote doctor to see and correct in case there is minor issue with the device and operation needs to be completed.

Technical details:

This will be a precise control industrial grade robot that has QA approval from FDA and other local Govt. authorities. It captures the base structure, key location/ anchor points of the human patient body under surgery or treatment. This will use a remote surgeons hand movements to do a precisely same step of movements and uses fuzzy logic, step gradients with min loss, AI and ML to learn the unique structure of the patient's body that will ensure the AI agent can then extrapolate and have a basic awareness of the placement of organs, their depths and X, Y, Z coordinates that will ensure a precise incision, stitching and covering of wounds is possible with no accidents. Industry 4.0 Technology, Health standards (HL7, HIPAA) and related imaging is possible as done in a clinical lab condition. However these will be rugged for the field work and has more tolerances related to temp, humidity, smoke, fire and other adverse ambient. The robotic ARM can be a standalone mode in a Expert system- only for small wounds and external treatments, live mode for surgery and mixed mode when there is a need for both and updates for standalone mode is provided by a offline surgeon for the expert system to conduct as per the guidance given (RPA + Robotics + Health standards + many more compliances). Our uniqueness is the use of AI / ML, Precision protocols (mm accuracy), live – feeds/ updates/ corrections and steps that are as good as human moves. Various form factors of the same arm can be developed based on actual needs and the demands.

4. **Robotic team for rescue operations** – disaster management, detection and recovery of humans from a crashed site, nuclear waste cleaning & disposal. This will have a team of AI agents and robots that are specially equipped to manage large scale building collapses like cutters, heavy lifters, human detectors, NLP .voice, cry detectors, fire, smoke and stress detectors. This will also be assisted by GPS and thermal imaging robots that help to find life forms under the rubbles and also generate the best way to reach them. These robots have great sense of logic, maths and common sense to detect, analyze and guide the field workers about the tasks they need to do that will help them reach the humans quickly and retrieve them safely from the rubbles. Also a doctor robot can help scan and analyze the damages to human organs and suggest quick remedies in case a doctor is not reachable during rescue operation. This is a team work and will have few various modes of operating robots that can be controlled by simple laptop based interface software.

Number	Feature	Benefits
1	Coordinated multi-agent system working in a virtual society that handles physical entities and mechanical systems as they are mapped to the virtual world	Modern AI based systems make life easier and removes the complexity of finding right solution
2	Self-correcting, continuous live streaming feeds and inputs from human via NLP feeds are analyzed by the expert systems to reach a set target and goal to rescue the identified victims with min loss and more accuracy.	Reduced time and allows manpower focus on assisting the AI system
3	Historical records are looked into and a help agent chooses the most appropriate path to rescue the victims.	Using similar situations and earlier resolutions, there is an assurance that the current issue will be resolved smoothly
4	Modern devices to sense biological activities, infra red vision, smell and analysis of the structural damage and alert for soon to collapse items are provided.	Reduced time and allows manpower focus on assisting the AI system
5	Interfaces to existing devices like drills, cranes, lifts are provided using IoT and simple wiring to the motors and mechanical actuators.	Reduced time and allows manpower focus on assisting the AI system
6	Human robot analysis the damage to human body and recommends the first aid to the paramedics	Speedier relief to human sufferings even before doctors arrive
7	Robots can be in different forms and have various nature and special tasks to complete	Flexibility to handle different rescue missions, set targets and time limits
8	Industrial grade robots that use AI / ML to learn about the ambience and update and organize each tasks in a coordinated manner makes this a unique kit	QA is assured that will be approved by several international bodies, doctors and engineers

Technical details:

Multi agent society (MAS) based soft agents and interfaces to HMI, Wired / Wireless devices, agent networking protocols, ambient sensors, AI based expert system, NLP feeds, camera feeds, Industrial 4.0 based robotic arms, cutters and human activity sensors all are part of the system. These work from a control panel / HMI panel that will provide all the critical data, next steps and for any human approval required. Suitable virtual world is generated based on the actual scenario and mapped to real world objects. Solutions to real world problems are found in virtual world using huge array of computing power, simulations and the most suitable solution and alternate solutions. Based on the solution the real world rigs are processed and timed for accurate and timely results. Call to external help is also possible if there are no unique solutions as time is important and life is at risk.

Confidentiality

Please treat all of our ideas and details with due confidentiality. We expect the same with other parties and stakeholders in our projects.

For further details please contact us at below given contacts

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