Annexure-A : Format of Response

S.No.		Response	Remarks
Company Profile			
1	Name of the Organization	Yes	
2	Address and Contact Details	Yes	
3	Type of participant (MSME, Start-up, Govt. Institution, Academia, Domestic Company/PSU/ Society/University/College / other registered organization etc.)	Yes	
4	Area of work / Domain expertise	Yes	
5	Size of company	Yes	
6	Location of Head office and branches if any	Yes	
7	Company turnover – last three years	Yes	Attached
System / module Readiness			
8	Proposed Product area category Product/ Solutions))	Yes	
9	Product phase (development TRL level/ POC / Field trial / ready for deployment)	Yes	
10	Compliance to any standards	Yes	
11	Customers / Clients / Collaboration if any	Yes	Attached
12	List of IPR / Awards / Paper Published if any	Yes	Attached
13	Standard body membership / contributions if any	Yes	
14	Certification testing (TEC / security etc.)	Yes	
Manpower			
15	Size of skilled manpower in the proposed area	15	
16	Number of Architects	4	
17	Number of Developers in the proposed area	6	
18	Number of Test and Integration Engineers	2	
19	Number of Field Support Engineers	3	
Principal Investor (first point of contact)			
20	Name & Designation	Yes	
21	Institution/ Department/ Address	Yes	
22	Bio-data/ Professional credentials	Yes	Attached
Co- Investor			
23	Name & Designation	Yes	
24	Institution/ Department/ Address	Yes	
25	Bio-data/ Professional credentials	Yes	Attached
Infrastructure			
26	Software and development tools used	Yes	
27	Details of Test equipment available for Proposed Modules/ system	Yes	
28	Deployment, Network planning tools used	Yes	

Process			
29	Product development lifecycle and Quality practices followed	Yes	
30	Test Automation practices followed if any	Yes	
Funding			
31	Estimated development cost of the proposed modules/system. (Separately module wise, in case multiple modules are proposed)	Yes	
32	Fund expected from this program (Separately module wise, in case multiple modules are proposed)	Yes	
33	Details of funding received for the Same / Similar project from other schemes of DoT / GOI.	Yes	
34	Details of self-funding / other sources for the Proposed modules / system	Yes	
Product description			
35	Brief product/ solution/ idea description	Yes	
36	Primary Objective of the module/ sub-system/system/ product proposed	Yes	
37	Key deliverables/ expected outcome	Yes	
38	Type of solution/ product- Stand-alone/ Sub-system/ Application/ Complete system / product	Yes	
39	Details of prior experience, expertise and components/ sub-systems/ product developed in selected area of interest.	Yes	Attached
40	(If the proposed solution/product is not stand-along and/or a module, please provide details of the larger solution it caters to/ required to integrate to arrive at full solution)	Stand alone	
41	Is the product/ technology related to present activities/ products being developed by CDOT? If so, how does theproduct tie in with present activities/ products, being developed by CDOT?	Yes	
42	Is it a new concept/ design/ solution/ product? If so, What are relevant standards being adopted?	Existing	Attached
43	Are there any alternate competitive technology/ product? available/ under development locally / outside India? Please provide the information available with you.What is the comparison of performance/ specification/ features?	Yes	Attached
44	Provide the specification document relevant to your product?	Yes	

Project Plan			
45	Provide development Plan indicating the major milestone and respective cost break up of each milestone Provide bar chart/ project plan	Yes	Attached
Additional Resource Requirements			
46	Manpower support requirements	Yes	Attached
47	Infrastructure support requirements	Yes	Attached
48	Tools, Testers and platform requirements	Yes	Attached
49	Any development tools and software requirements	Yes	Attached
Risk and Risk mitigation proposed			
50	Risk areas and challenges, as envisaged	Yes	Attached
51	Mitigation plan and/or contingency plan suggested, if any	Yes	Attached
52	Potential foreground IPR (Intellectual Property) that can be developed by the participants individually and collectively	Yes	
53	Background IPR available for contribution to the project and Nature of ownership of the background IPR (exclusively owned, Jointly owned, Taken under license etc.)	Yes	
54	Status of background IPR (eg in planning stage, on roadmap, patented/ copyrighted, under development, under field trials, mass deployed etc.). And also specify expected duration of IPR availability to this project	Yes	
Regulatory approvals Requirements			
55	Any regulatory approvals required from Govt for the product/ solution being proposed	Yes	

MALLA REDDY ENGINEERING COLLEGE

(An UGC Autonomous Institution, Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad).
Accredited by **NAAC with 'A++'** Grade (Cycle- III), **NBA Tier –I** Accredited
(B.Tech – CE, EEE, ME, ECE & CSE, M.Tech – Structural Engg, Electrical Power Systems, Thermal Engg.)
IIC – Four Star Rating, **NIRF** Rank Band 250-300, **ARIIA** Band Performer,
Maisammaguda(H), Medchal - Malkajgiri District, Secunderabad, Telangana State – 500100, www.mrec.ac.in

Project Title:

Enhanced Face Recognition and Communication of UAV System using 5G and SDN

Company Profile

1. Name of the Organization
   Malla Reddy Engineering College

2. Address and Contact Details
   Main Campus, Dulapally,
   Maisammaguda Post
   via. Kompally, Rangareddy Dt,
   Secunderabad, Hyderabad, Telangana-500100

3. Type of participant (MSME, Start-up, Govt. Institution, Academia, Domestic Company/ PSU/ Society/University/College / other registered organization etc.)
   College

4. Area of work / Domain expertise
   Wireless Communication / Multimedia(10 years)
   (Title of the Work: Multimedia Transmission over Dynamic Adhoc Network (Qos))

5. Size of company
   15 (Telecom Related)

6. Location of Head office and branches if any
   Dulapally,
   Maisammaguda Post
   via. Kompally, Rangareddy Dt,
   Secunderabad, Hyderabad, Telangana-500100

7. Company turnover – last three years
   Yes. Attached as PDF file

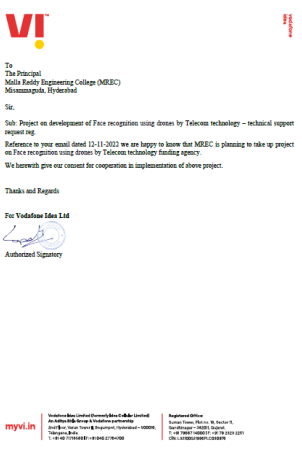
System / module Readiness

8. Proposed Product area category Product/ Solutions))
   New Design

9. Product phase (development TRL level/ POC / Field trial / ready for deployment)
   TRL level - I

10. Compliance to any standards
    TRAI/DoT

11. Customers / Clients / Collaboration if any
    1. Vodafone Idea Limited - LOI Attached
    2. Reinv Labs - LOI Attached
    3. Unistring Tech Solutions - LOI Attached



To
The Principal
Malla Reddy Engineering College (MREC)
Maisammaguda, Hyderabad

Sir,

Sub: Project on development of Face recognition using drones by Telecom technology – technical support request reg.

Reference to your email dated 12-11-2022 we are happy to know that MREC is planning to take up project on Face recognition using drones by Telecom technology funding agency

We herewith give our consent for cooperation in implementation of above project.

Thanks and Regards

For Vodafone Idea Ltd

Authorized Signatory

myvi.in

Reinv Labs
Innovative Researches

GST NO: 37BKJPK7555A1Z3

Letter of Interest

RL:04/NOV/22

To
The Principal
Malla Reddy Engineering College (MREC)
Maisammaguda, Hyderabad

Dear Sir,

Sub: Development of a project on face recognition using telecom technology – Technical support

Reference to your email dated on 10-11-2022 we are happy to know that MREC is planned to take new project on Face recognition using drones by Telecom technology funding agency

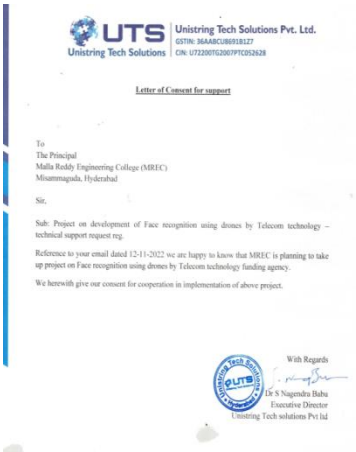
We herewith give our Interest in executing project with your cooperation in implementation of above project. Kindly do the needful to get this executed in time to better for the future relation. We have a good team to support in all forms.

Thanking You

Best regards

For REINV LABS

K. Mehar Sai



UTS Unistring Tech Solutions Pvt. Ltd.
Unistring Tech Solutions
GSTIN: 36AABCU8691B1Z7
CIN: U72200TG2007PTC052628

Letter of Consent for support

To
The Principal
Malla Reddy Engineering College (MREC)
Maisammaguda, Hyderabad

Sir,

Sub: Project on development of Face recognition using drones by Telecom technology – technical support request reg.

Reference to your email dated 12-11-2022 we are happy to know that MREC is planning to take up project on Face recognition using drones by Telecom technology funding agency.

We herewith give our consent for cooperation in implementation of above project.

With Regards

Dr S Nagendra Babu
Executive Director
Unistring Tech solutions Pvt ltd

12. List of IPR / Awards / Paper Published if any

    Papers Published - 5

- S.Jalal Ahmad, V.S.K.Reddy, A. Damodaram, P. Radha Krishna "Delay Optimization using Knapsack Algorithm for Multimedia Traffic in MANETs" Expert Systems with Applications vol.42 pp 6819-6827 (2015). www.elsevier.com/locate/eswa
- S.Jalal Ahmad, P. Radha Krishna, 'BHQRSM - Binary Hex Quadratic Residue Security Model to Enhance the Trust in MANETs', Wireless Pers Commun (2018) 101: 661. https://doi.org/10.1007/s11277-018- 5710-9
- R. K Singh, D.Elizabath Rani, Syed Jalal Ahmad, "RSBHCWT: Re-Sampling Binary Hex Code Windowing Technique To Enhance Target Detection" Indian Journal of Science and Technology, Vol 9(47),pp 1-5, December 2016. https://sciresol.s3.us-east-2.amazonaws.com/IJST/Articles/2016/Issue-47/Article44.pdf
- Ishrath Unissa, Md. Aleem, Syed Jalal Ahmad, Signal Processing for OFDM Spectrum Sensing Approaches in Cognitive Networks, Dec. 2021. https://www.taylorfrancis.com/chapters/edit/10.1201/9781003338789-6/signal-processing-ofdm-spectrum-sensing-approaches-cognitive-networks-ishrath-unissa-md-aleem-syed-jalal-ahmad
- Syed Jalal Ahmad, Ishrath Unissa, M. Shoukath Ali, Abhay Kumar, Enhanced security to MANETs using digital codes, Journal of Information Security and Applications, Volume 66, 2022, 103147, ISSN 2214-2126, https://doi.org/10.1016/j.jisa.2022.103147

13. Standard body membership / contributions if any

    Executive Member - Institute of Engineers and Member IEEE

14. Certification testing (TEC / security etc.)

    Yes, approval required

Manpower

15. Size of skilled manpower in the proposed area

    15

16. Number of Architects
    Architects - 4

17. Number of Developers in the proposed area
    Design Engineer - 4
    Programmer - 2

18. Number of Test and Integration Engineers
    Test Engineer - 1
    Integration Engineer - 1

19. Number of Field Support Engineers
    Field Support Engineer - 3

Principal Investor (first point of contact)

20. Name & Designation
    Dr.A.Ramaswami Reddy,
    Principal & Professor,
    CSE Department,
    Malla Reddy Engineering College

21. Institution/ Department/ Address
    Malla Reddy Engineering College
    Main Campus, Dulapally,
    Maisammaguda Post
    via. Kompally, Rangareddy Dt,
    Secunderabad, Hyderabad, Telangana-500100

22. Bio-data/ Professional credentials

    Dr. A. Ramaswami Reddy did his B.Tech (CSE) from AMIE, M.Tech (CSE) from R.V.R & J.C, ANU and Ph.D (CSE) from JNTU Kakinada. He has 22 years of experience in teaching, research and consultancy. Currently working as Principal at Malla Reddy Engineering College and obtained Four Research Projects of worth 1.53 Crores under AICTE – Margdarshan, SPICES and Microsoft- AI for Earth Grant. Published research articles in more than 44 peer reviewed journals indexed in SCI, Scopus & WoS, published three Patents and received four prestigious awards from reputed organizations. He guided more than 60 B.Tech Students and 44 M.Tech Students.

    The main objective of my research was image segmentation, to extract valuable data from the images to identify various objects present. The problem of image segmentation is investigated with a spotlight on magnetic resonance (MR) images of brain in this proposal. Brain tissues gray scale values are complex in nature to process because of their in homogeneity. To overcome these limitations, which can be applied for labelling, identification of image boundaries and to determine the exact location of tumour, a novel method of brain MR image segmentation called Fuzzy – MRF using Conjugate Gradient method is developed. The outcomes obtained from Fuzzy – MRF

model are compared with previously proposed ICM algorithm. It is observed that the segmentation results obtained from Fuzzy – MRF are more accurate in terms of quality metrics and noise reduction for each brain MR image. The results obtained from Hidden Markov Random Field model are compared with Fuzzy- MRF model. It was observed that the segmentation results obtained from this are more accurate in terms of quality metrics and noise reduction for each brain MR image.

Co- Investor

23. Name & Designation

    1. **Dr.Syed Jalal Ahmad, Professor,**
       ECE Department, Malla Reddy Engineering College
    2. **Dr.N.Manikanda Devarajan, Professor,**
       ECE Department, Malla Reddy Engineering College
    3. **Dr.M.Jagadeesh Chandra Prasad, Professor & Head,**
       ECE Department, Malla Reddy Engineering College
    4. **Mr.Y.Malleswar,**
       Chief Technology Officer,
       Invas Technologies, Hyderabad

24. Institution/ Department/ Address

    Malla Reddy Engineering College
    Main Campus, Dulapally,
    Maisammaguda Post
    via. Kompally, Rangareddy Dt,
    Secunderabad, Hyderabad, Telangana-500100

25. Bio-data/ Professional credentials

    I (**Dr.Syed Jalal Ahmad**) started my carrier as a researcher in the year 2010 with an area of Computer Networks (Such as Sensor Networks, Ad Hoc Networks, Cognitive Networks and Security). Initially I developed a routing protocol to improve the QoS to multimedia transmission over dynamic Adhoc Networks by considering delay as a main parameter, latter I concluded that all network parameters are equally important in particular B.W, Energy, T.I, Distance and delay. So by considering all network parameters an enhanced routing model was designed to get better QoS. After improving routing packet loss calculation, Buffer management and security were essential issues, therefore more attention was given to resolve these issues. Various techniques and models have been suggested to mitigate these issues. Since 2016 main focus was given to improve digital codes to detect multiple targets in Doppler radar and (C-IoT) to develop a prototype that can improve smart cities. Recently start to work on 5G using SDN to avoid pilot contamination, to estimate channels and to improve directivity. Till date various Journals and Conference Papers have been published in reputed journals and conferences and three papers are communicative. Also Number of M.Tech Thesis has been completed under my supervision. Presently I am guiding one PhD scholar.

Dr.N.Manikanda Devarajan received his B.E. (ECE) Degree Periyar University, M.E. Degree in Computer & Communication from Anna University. He completed his Ph.D. Degree in Information and Communication Engineering under Anna University. His area of research is Machine Learning, Artificial Intelligence, Wavelet OFDM, PAPR reduction, Wideband Channel Estimation, MIMO OFDM and OFDMA systems. He has more than 15 years of teaching and research experience. He has published around 25 Research Papers in International peer reviewed journals listed in SCI, Scopus, WoS, UGC Care Listed and Conference Proceedings.

Dr.M.Jagadeesh Chandra Prasad started his carrier as a researcher with an idea to enhance of channel estimation using probabilistic model. Later found that beamforming is another issue and tried to mitigate this issue to using dynamic algorithm. Now working with massive MIMO system to improve the quality of service by minimizing the pilot contamination problem and to develop effective channel estimation technique which improves the packet delivery ratio, and minimizes the delay. He has 22 years of teaching and research experience. He has published 36 papers in various international journals.

INVAS Technologies (P) Ltd, incorporated in the year 2006 with the main objective of carrying-out the business of providing Telecom Test Solutions and value-added services in India, Nepal, Bangladesh and Sri Lanka.
We are a team of technical experts with a long and successful track record in the technologies used for fixed and mobile networks. We have provided our customers with advanced telecommunications products and services that are highly reliable, value for the money and supported during and beyond the warranty period. The supplied products are engineered for customers to meet the environmental conditions and comply with the international standards.

Infrastructure

26. Software and development tools used
    Yes (Multisim, HFSS, Matlab)

27. Details of Test equipment available for Proposed Modules/ system

Name of the Equipment/Software	Description
SDN Software- Hardware Bundle for 2x2 MIMO Applications	USRP 2901 MIMO Hardware Antennas Communication Systems Design Software (Multisim) 2021

28. Deployment, Network planning tools used

The network used is 5G and the communication network consists of UAV (Drone) with transceiver and an antenna system to communicate with base station. Furthermore high definition 360° cameras to take pictures and different types of sensors are used to process these pictures and send it to central unit of the UAV to take rapid action with respect to time. Further Invas Technology provides the support for testing and verification to complete the proposed work.

Process

29. Product development lifecycle and Quality practices followed

6-7 Years, as per TEC

30. Test Automation practices followed if any

Yes, it is followed. Built-in Self Test/Testing

Funding

31. Estimated development cost of the proposed modules/system. (Separately module wise, in case multiple modules are proposed)

Budget Head	**Year-1(in Cr)**	**Year-2(in Cr)**	**Total(in Cr)**
Manpower	1.056	1.056	2.112
Equipments	1.137	-	1.137
Software Tools	0.86	-	0.86
Infrastructure	0.206	-	0.206
Consumables	0.50	0.50	1.00
Travel	0.05	0.05	0.10
Workshop & Seminar	0.01	0.01	0.02
Outreach Program	0.10	0.10	0.20
Contingencies	0.50	0.50	1.00
IPR, Accounting, Marketing	-	0.50	0.50
Cost of Testing	0.50	0.50	1.00
Deployment Cost	0.50	0.50	1.00
Overhead	0.85	0.85	1.70
Miscellaneous Cost (EB bill, Water, Printer, etc)	1.00	1.00	2.00
Grand Total	**6.159**	**3.956**	**12.835**

32. Fund expected from this program (Separately module wise, in case multiple modules are proposed)

Fund requested from USOF:

Budget Head	Year-1(in Cr)	Year-2(in Cr)	Total(in Cr)
Manpower	1.056	1.056	2.112
Equipments	1.137	-	1.137
Software Tools	0.66	-	0.66
Consumables	0.50	0.50	1.00
Contingencies	0.50	0.50	1.00
Cost of Testing	0.50	0.50	1.00
Deployment Cost	0.50	0.50	1.00
Overhead	0.85	0.85	1.70
Miscellaneous Cost (EB bill, Water, Printer, etc)	1.00	1.00	2.00
Grand Total	**6.703**	**4.906**	**11.609**

Fund by Host Institution:

Budget Head	Year-1(in Cr)	Year-2(in Cr)	Total(in Cr)
Software Tools	0.20	-	0.20
Infrastructure	0.206	-	0.206
Travel	0.05	0.05	0.10
Workshop & Seminar	0.01	0.01	0.02
Outreach Program	0.10	0.10	0.20
IPR, Accounting, Marketing	-	0.50	0.50
Grand Total	**0.566**	**0.66**	**1.226**

Fund requested from USOF - Rs. 11.609 Cr
Fund by host Institution - Rs.1.226 Cr

33. Details of funding received for the Same / Similar project from other schemes of DoT / GOI.

Yes. Microsoft - AI for Earth Grant Fund Received

Project Titled: A Smart Agriculture Development for Monitoring the fields using IoT and Artificial Intelligence

34. Details of self-funding / other sources for the Proposed modules / system

Have collaboration with Invas Technologies, Vodafone Idea Limited, Reinv Labs and Unistring Tech Solutions

Product description

35. Brief product/ solution/ idea description

The proposed UAV can be used near LOC (Line of Control). The designed invention can enhance the security of LOC in terms of continuous monitoring of unauthorized objects (e.g. Drones, humans, vehicles etc). The proposed system not only monitors the unauthorized ground or flies movement but also respond it with an IOT based weapon associated with it.

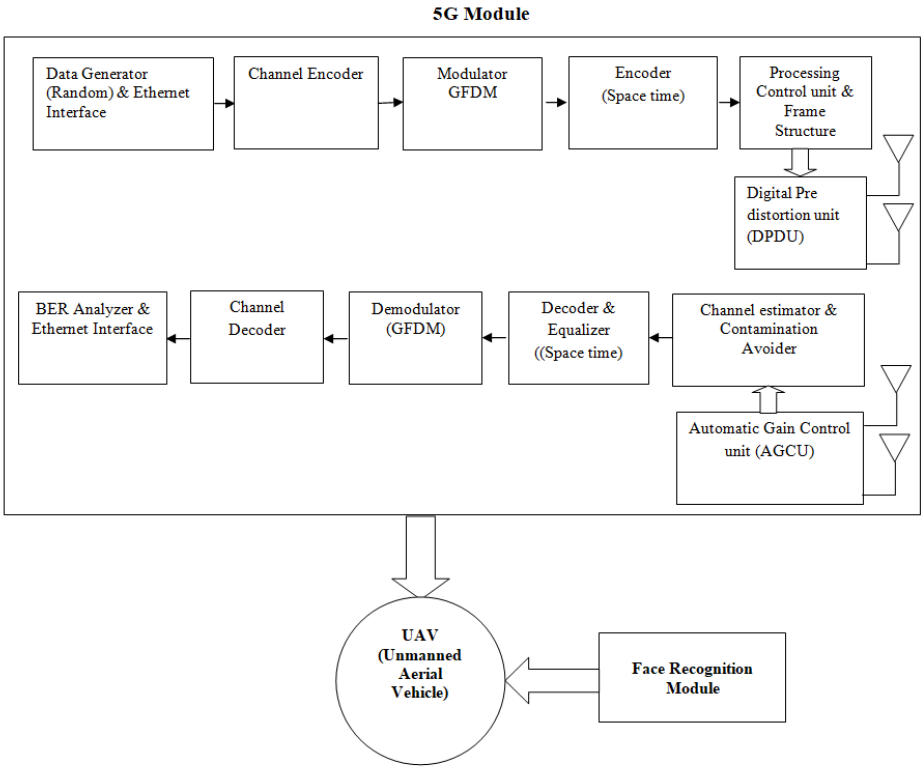


Figure 1: Block diagram of Proposed Model

Figure 1represents the block diagram of the proposed model. Face recognition module (FRM) uses CNN to train the system, store the images and compare them with the incoming images. Fifth generation (5G) communication is established by using generalized frequency division multiplexing (GFDM) modulation and demodulation technique as it provides flexibility while selecting parameters (such as pulse shaping, reducing cyclic prefix etc.)

The random images of the objects taken from the drone is converted into digital signals and fed as input to the channel encoder which reduces the interference while the signal is travelling through the channel. The pilot bits designed are orthogonal series, used to optimize the pilot contamination (by other signals operating at same frequencies) and ease the channel estimation process. The space encoder gives reliability to the data as the array of patch antennas are employed at both the transmitter and receiver end. These antennas are simple, small cost effective and operate at different frequency bands.

The processing central unit and structure block provides the appropriate idea to align the data frames for transmission and the pre-distortion block is used to improvise the linearity of the amplifiers.

At the receiver end decoders and demodulator are present to synchronize and reconstruct the transmitted image with minimal distortion. Channel estimation and pilot contamination reduces orthogonal.

36. Primary Objective of the module/ sub-system/system/ product proposed

- **Develop face recognition algorithm to capture the face images on mobility in UAV.**
- **Design a dynamic algorithm to optimize the safety and energy of UAV**
- **Develop mechanisms for efficient use of Bandwidth, Beamforming and pilot contamination by employing SDN.**
- **Improve the communication security to UAV System.**

37. Key deliverables/ expected outcome(Excel sheet yearwise/Quarterwise) gang chart

- ✓ **Development of a Secure and energy efficient algorithm to enhance resource utilization of UAV**
- ✓ **Enhance the Design of a patch antenna to optimize directivity**
- ✓ **Design of a channel estimation technique to optimize Pilot contamination and bandwidth**
- ✓ **Development of an efficient face recognition approach using deep learning**
- ✓ **Develop a secure and efficient Model to enhance target detection of mobile UAV**
- ✓ **Testing and Validation of anticipated system**
- ✓ **Prototype of the projected approach**

Activiteis	Months							
	0-3	3-6	7-9	10-12	13-15	16-18	19-21	22-24
Design algorithm for UAV Safety and Energy								
Antenna Design								
Developing a machanism for Bandwidth, Beamforming and pilot contamination by employing SDN								
Develop a Face Recognition algorithm								
Design algorithm to detect the Mobility of UAV, Handoff and Secure Communication								
Testing & Validation								
Prototype								

38. Type of solution/ product Stand-alone/ Sub-system/ Application/ Complete system / product

Stand-alone

To enhance the surveillance, communication and strengthen the paramilitary forces, UAVs seems to be the optimum solution to mitigate the above mentioned issues. UAVs can be used to enhance the growth of the nation ranging from agriculture to defence; moreover it can act as a backbone in the upcoming communication system.

39. Details of prior experience, expertise and components/ sub-systems/ product developed in selected area of interest.

The research potential of the college is duly recognized by various funding agencies both national and international. The college got Rs. 1 Crore grant from the software giant Microsoft under '**AI for Earth**' scheme and AICTE has granted Rs. 50 Lakh worth 'Margadarshan' scheme to mentor 10 Engineering colleges for the NBA accreditation process.

40. (If the proposed solution/product is not stand-along and/or a module, please provide details of the larger solution it caters to/ required to integrate to arrive at full solution)

Stand-alone

41. Is the product/ technology related to present activities/ products being developed by CDOT? If so, how does the product tie in with present activities/ products, being developed by CDOT?

Yes. As per the TRAI

42. Is it a new concept/ design/ solution/ product? If so, What are relevant standards being adopted?

Existing, however the proposed design improves the face recognition probability and communication of Drones in terms of both hardware and software. Here modified 5G and SDN technologies are adapted to enhance the probability of communication for face images on mobility in UAV.

43. Are there any alternate competitive technology/ product? available/ under development locally / outside India? Please provide the information available with you. What is the comparison of performance/ specification/ features?

International Status

Huang Yao et al (2019) presented a review of UAV for remote sensing applications, in which the authors explain different types of UAV applications. Here the authors greatly focus on UAVs societal applications. Harilaos Koumaras et al (2021) devised a technique with Command and Control Software Component at the Edge to improve the energy of UAV by exploiting Multi-access Edge Computing (MEC). In this approach the authors use AI algorithm to control the energy in holistic manner, which

may increase the delay and simultaneously degrades the performance of the system. UAVs have a significant marketplace to grow quickly (Godage 2019)

National Status

DRDO carried out a successful test flight of Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon-201 called Rustom II(TAPAS-BH-201) on 25/02/2018. Gupta el al (2021) presented advancements of UAVs towards future transportation. In this paper the authors articulate various issues and challenges of UAV system. Furthermore the authors exchange comparative analysis of various techniques used to develop UAV system. Sreenadh Chevula et al (2021) projected a model of a drone in which the authors put attention towards the mechanical design of blades to optimize the working situation under different weather circumstances. However all the above approaches are just enhances the mechanical structure, but less attention was given towards automation of UAV in terms of security of the tertiary

44. Provide the specification document relevant to your product?

    The proposed product (UAV) will be having an AUW (Authorized Unpriced Work) of 500 Kgs approximately, length 6 m and has a wing span of 15. Furthermore it can fly at a maximum speed of 100km/hr with survival up to 12 hours. It has the capability to manage at line of sight ranges of 75km and accomplish a maximum upper limit of 2,000ft. The proposed product can hold payloads of 50kg via LOS up to 25km. The product is also equipped with 4 high resolution cameras to ensure the desired activity within the given limit.

Project Plan

45. Provide development Plan indicating the major milestone and respective cost break up of each milestone Provide bar chart/ project plan

Activiteis	Months							
	0-3	3-6	7-9	10-12	13-15	16-18	19-21	22-24
Design algorithm for UAV Safety and Energy								
Antenna Design								
Developing a machanism for Bandwidth, Beamforming and pilot contamination by employing SDN								
Develop a Face Recognition								
Design algorithm to detect the Mobility of UAV, Handoff and Secure Communication								
Testing & Validation								
Prototype								
Cost breakup	**2.861 Cr**	**1.114 Cr**	**1.264 Cr**	**1.414 Cr**	**1.189 Cr**	**1.239 Cr**	**1.239 Cr**	**1.289 Cr**

Additional Resource Requirements

46. Manpower support requirements

Skilled Man Power	No. Required	Man Month	Year-I(in Cr)	Year-II(in Cr)
Architects	4	90,000.00	0.432	0.432
Design Engineer	4	55,000.00	0.264	0.264
Programmer	2	30,000.00	0.072	0.072
Test Engineer	1	40,000.00	0.048	0.048
Integration Engineer	1	50,000.00	0.060	0.060
Field Support Engineer	3	50,000.00	0.180	0.180
Total			**1.056**	**1.056**

47. Infrastructure support requirements

Infrastructure	Estimated Cost (Year-I)(in Cr)
Work Space	0.150
Table	0.010
Chair	0.005
Light	0.001
Air Conditioner	0.030
Other Furniture	0.010
Total	**0.206**

48. Tools, Testers and platform requirements

Name of the Equipment	Quantity	Estimated Cost (Year-I) (in Cr)
SDN Software-Hardware Bundle for 2x2 MIMO Applications	1	0.150
Solar Cell	4	0.075
Camera	4	0.110
Gateway	8	0.116
Wireless Sensor Nodes	50	0.160
Sensors to acquire Physical parameters	30	0.156
High speed IoT processors	10	0.160
Piezometer with data logger	1	0.130
Drone	10	0.080
Total		**1.137**

49. Any development tools and software requirements

Name of the Tool/Software	Quantity	Estimated Cost (Year-I)
MATLAB with toolbox	1	0.260
HFSS Software	1	0.400
Cloud Space	1	0.200
Total		**0.860**

Risk and Risk mitigation proposed

50. Risk areas and challenges, as envisaged

    The various risk factors which can cause consequences in terms of manpower, equipment failure and testing can be compensated by maintaining a separate budget of about 15% of the total to meet the end goal of the project achievement.

51. Mitigation plan and/or contingency plan suggested, if any

    In case of any risk/failure the working team will move to plan B which has been well planned in advance. The project team will take rapid action to reduce or eliminate the risk by considering the risk factors. That is in case of any technical risk/failure, we will call an expert member from the telecom industry to identify the problem and resolve the issue in due course of time. For this issue 2% of the total project cost will be employed to meet the technical end goal of the project. Furthermore for any other risk (e.g. management, deployment, unavailability of equipment/lost), 1% of the total budget will be utilized for consultation of the expert members from the desired division to work out the discrepancy.

    Moreover, if some uneven problem happens in the project, we have to call a test bench from the telecom industry to detect and correct the problem associated with the project. For this the project cost may increase 1-2%.

52. Potential foreground IPR (Intellectual Property) that can be developed by the participants individually and collectively

    Yes

53. Background IPR available for contribution to the project and Nature of ownership of the background IPR (exclusively owned, Jointly owned, Taken under license etc.)

    Shown interest by Invas Technologies, Vodafone Idea Limited, Reinv Labs and Unistring Tech Solutions

54. Status of background IPR (eg in planning stage, on roadmap, patented/ copyrighted, under development, under field trials, mass deployed etc.). And also specify expected duration of IPR availability to this project

    Yes required. For 15 Years

Regulatory approvals Requirements

55. Any regulatory approvals required from Govt for the product/ solution being proposed

    Yes. As per TRAI

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

BALANCE SHEET AS ON 31-03-2020

LIABILITIES	AMOUNT Rs.		ASSETS	AMOUNT Rs.
GENERAL FUND	(15,47,42,652)		FIXED ASSETS	28,91,43,159
SECURED LOANS	13,46,521		DEPOSITS	9,18,25,627
SUNDRY CREDITORS	78,13,120		PURCHASE & ADVANCES	2,07,02,752
OTHER CURRENT LIABILITIES	59,72,81,556		OTHER CURRENT ASSETS	21,00,52,929
INTER TRANSFER RECEIPTS	17,98,86,674		CASH & BANK BALANCES	4,35,80,751
TEQIP-II Grant	2,37,20,000			
	65,53,05,219			65,53,05,219

For M S R & ASSOCIATES
CHARTERED ACCOUNTANTS

M. Sitaramaiah

(M. SITARAMAIAH)
Partner
M. No. 221565
Firm Reg. No. 014318S

M S R & ASSOCIATES * CHARTERED ACCOUNTANTS * F.R.No. 014318S

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100.

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

BALANCE SHEET SCHDULES AS ON 31-03-2020

GENERAL FUND:	
GENERAL FUND	(21,29,92,203)
ADD: EXCESS OF INCOME OVER EXPR.	5,82,49,551
	(15,47,42,652)
SECURED LOANS:	
C.BANK VEHICLE LOAN - 6773603(	6,73,252
C.BANK VEHICLE LOAN - 6773603(	6,73,269
	13,46,521
OTHER CURRENT LIABILTIES:	
Audit Fee Payable	35,400
E S I Payable	2,028
Exam Fee (Online)	3,02,16,886
Exam Fees	14,65,964
Ibm Student Training	40,100
IEEE Registration Charges	9,600
N S S	1,81,950
PF PAYABLE	1,63,821
Project Fee	22,11,050
PT Payable	57,550
Q Spider Training	23,62,200
Remuneration Payable	44,000
Salaries Payable	55,89,63,043
SDP FEE	9,19,300
Staff Club Payable	1,02,900
TDS Payable	2,30,554
TDS Payble(Contract)	650
TDS (Professional)	1,00,000
Workshop/Oxford/BEC	1,74,560
	59,72,81,556
INTER TRANSFERS RECEIPTS:	
C M R E S	(1,51,28,297)
MRCET	8,01,99,948
MRCP	7,88,56,936
MRIM	1,65,80,715
MRPC	1,93,77,372
	17,98,86,674
DEPOSITS:	
Electricity Deposit	63,426
Fixed Deposits	9,17,62,201
	9,18,25,627
OTHER CURRENT ASSETS:	
Loans & Advances (MREC-TEQIP)	99,68,164
Loans & Advances (TEQIP-MREC)	(99,68,164)
Fee Receivable	4,51,09,688
Scholorships Receivable	16,49,30,000
TDS Receivable	13,241
	21,00,52,929
CASH & BANK BALANCES:	
Cash	1,49,271
Canara Bank - 71	2,58,015
(MRPGC)-SBI - 3066612362	1,25,752
(MRPGC) - UBI - 327401010036197	391
SBH- 62186715641(CF)	27,934
SBH - 62186715776(ERF)	1,87,507
SBH-62186715812 (MF)	13,337
SBH-62186715867 (FDF)	12,617
SBI-30666122940	1,84,491
UBI-327401010023092	16,310
UBI-711401010050001	3,58,49,616
UBI-711401010050009(Exam Br)	1,13,670
UBI-711401010050010 (AUTO)	14,31,590
UBI - 711401010050033 (Grants)	1,05,342
UBI - 711401010050046 (Placement	47,45,320
Cash	18,961
SB- MG - 62218846310	3,40,628
	4,35,80,751

M S R & ASSOCIATES * CHARTERED ACCOUNTANTS *

Principal
Malla Reddy Engineering College
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CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

INCOME & EXPENDITURE ACCOUNT AS ON 31-03-2020

	EXPENDITURE	AMOUNT Rs.		INCOME	AMOUNT Rs.
To	Admission Fee	4,06,400	By	Fee Collections	18,03,91,280
To	Advertisement Charges	30,95,406	By	Scholarship	19,58,74,720
To	Affiliation Fee	48,94,305	By	Transportation Collection	24,40,950
To	Annual Maintance Charges	-	By	Admn & University Fee	1,49,67,000
To	Audit Fee	35,400	By	AICTE (Grants)	17,59,762
To	Bank Charges and Interest	23,952	By	Akshara 2020	55,000
To	Building Maintenance	5,54,445	By	Cricket Ground Rent	1,58,960
To	College Celebration	67,400	By	Interest Receipts	4,438
To	College Certificate	-			
To	Common Service Fee	53,43,000			
To	Computer Maintenance	20,11,863			
To	Conveyance Charges	31,695			
To	Electricity Charges	20,35,796			
To	ESI Contribution	1,15,184			
To	Faculty Development Programme	1,29,682			
To	Garden Maintanance	1,05,100			
To	Honororium	3,77,000			
To	Inspection Fee	65,020			
To	Journals & Periodicals	7,49,541			
To	Lab Maintenance	11,63,887			
To	Library Maintenance	2,13,000			
To	Meetings & Seminars	5,30,076			
To	Membership & Subscription	1,54,530			
To	News Paper & Periodicals	16,038			
To	Office Maintenance	3,21,238			
To	PF Contribution Employer	25,68,826			
To	Postage & Courier	1,850			
To	Printing & Stationary	47,28,331			
To	Rates & Taxes	35,83,402			
To	R&D Expenses	36,68,579			
To	Repairs & Maintenance	2,69,017			
To	Salaries	25,07,01,256			
To	Security Services	7,39,626			
To	Staff Ratification Fee	3,08,000			
To	Staff Welfare	7,04,762			
To	Student Development Expenses	1,31,448			
To	Student Welfare Expenses	6,16,820			
To	Telephone Charges	50,999			
To	Training and Placement	3,90,452			
To	Travelling Expenses	5,04,650			
To	U G C Project Expenses	82,826			
To	Vehicle Maintenance	26,106			
To	Workshop	3,000			
To	Depreciation	4,58,82,651			
	Excess of Income Over Expenditure	**5,82,49,551**			
		39,56,52,110			**39,56,52,110**

For M S R & ASSOCIATES
CHARTERED ACCOUNTANTS

M. Sitaramaiah

(M. SITARAMAIAH)
Partner
M. No. 221565
Firm Reg. No. 014318S

M S R & ASSOCIATES ★ F.R.No. 014318S ★ CHARTERED ACCOUNTANTS

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

FIXED ASSETS SCHEDULE AS ON 31-03-2020

PARTICULARS	DEPN RATE	OP. BAL 01-04-2019	ADDITIONS		TOTAL 31-03-2020	DEPREC-IATION	CLG. BAL 31-03-2020
			Bef. Sep	Aft. Sep			
LAND		18,70,000			18,70,000	-	18,70,000
AIR CONDITIONARS	15%	11,77,426			11,77,426	1,76,614	10,00,812
BUILDGING & CIVIL WORKS	10%	17,92,37,021	1,87,69,967	1,40,05,027	21,20,12,015	2,05,00,950	19,15,11,064
COMPUTERS & SOFTWARES	40%	2,13,71,083	1,32,85,653	69,620	3,47,26,356	1,38,76,618	2,08,49,737
ELECTRICAL FITTINGS	15%	4,42,493			4,42,493	66,374	3,76,119
FURNITURE & FIXTURES	10%	1,07,38,862	18,59,435	17,36,660	1,43,34,957	13,46,663	1,29,88,294
GENERATOR	15%	1,76,164			1,76,164	26,425	1,49,740
JOHN LIFT	15%	6,937			6,937	1,041	5,896
LIBRARY BOOKS	10%	66,49,286	6,18,171	5,11,928	77,79,385	7,52,342	70,27,043
LAB EUIPMENT	15%	1,98,50,548	9,65,375	7,73,597	2,15,89,520	31,80,408	1,84,09,112
OFFICE EQUIPMENT	15%	51,32,561	9,62,100	22,62,475	83,57,136	10,83,885	72,73,251
SPORTS & MUSICALS	15%	16,60,691		1,55,755	18,16,446	2,60,785	15,55,661
VEHICLES	15%	2,79,55,092	20,00,000		2,99,55,092	44,93,264	2,54,61,828
XEROX MACHINE	15%	7,81,883			7,81,883	1,17,283	6,64,601
		27,70,50,047	**3,84,60,701**	**1,95,15,062**	**33,50,25,810**	**4,58,82,651**	**28,91,43,159**

M S R & ASSOCIATES
CHARTERED ACCOUNTANTS

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CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

BALANCE SHEET AS ON 31-03-2021

LIABILITIES	AMOUNT Rs.		ASSETS	AMOUNT Rs.
GENERAL FUND	(1,59,43,473)		FIXED ASSETS	36,50,45,976
SECURED LOANS	8,64,653		DEPOSITS	16,43,25,627
SUNDRY CREDITORS	1,29,83,180		PURCHASE & ADVANCES	2,05,83,459
OTHER CURRENT LIABILITIES	68,74,29,741		OTHER CURRENT ASSETS	28,92,23,257
INTER TRANSFER RECEIPTS	14,12,51,819		CASH & BANK BALANCES	1,11,27,600
TEQIP-II Grant	2,37,20,000			
	85,03,05,920			85,03,05,920

For M S R & ASSOCIATES
CHARTERED ACCOUNTANTS
M - Sitaramaiah

(M. SITARAMAIAH)
Partner
M. No. 221565
Firm Reg. No. 014318S

M S R & ASSOCIATES ★ F.R.No. 014318S ★ CHARTERED ACCOUNTANTS

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100.

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

INCOME & EXPENDITURE ACCOUNT AS ON 31-03-2021

	EXPENDITURE	AMOUNT Rs.		INCOME	AMOUNT Rs.
To	ADMISSION FEE	14,51,600	By	AICTE (GRANTS)	35,97,110
To	ADVERTISEMENT CHARGES	4,33,394	By	EXAM FEE(RECEIPTS)	4,82,58,745
To	AFFILIATION FEE	4,95,400	By	FEE COLLECTIONS	42,89,34,001
To	AICTE GRANTS EXP	99,542	By	GRANTS RECD	-
To	ANNUAL MAINTENANCE CHARGES	-	By	INTEREST RECEIPTS	2,21,172
To	BANK CHARGES AND INTEREST	28,676	By	OTHER INCOME	3,945
To	BUILDING MAINTENANCE	26,41,157	By	PROJECT FEE(RECEIPTS)	39,93,050
To	COMMON SERVICE FEE	-	By	Q SPIDER TRAINING(RECEIPTS)	23,62,200
To	COMPUTER MAINTENANCE	20,34,123	By	SDP FEE(RECEIPTS)	14,46,300
To	CONSULTANCY CHARGES	-	By	TRAINING AND PLACEMENT	1,21,500
To	DONATIONS	-	By	TRANSPORTATION COLLECTION	-
To	ELECTRICITY CHARGES	13,87,450	By	TRANSPORTATION RECOVERY	3,74,400
To	E S I CONTRIBUTION	1,26,146	By	UNIERSITY & ADMN FEE	1,67,22,500
To	EXAM FEE(EXPENSES)	47,63,212	By	WORKSHOP OXFORD(RECEIPTS)	1,74,560
To	GARDEN MAINTANANCE	6,36,330			
To	GRANTS UTILISATION	-			
To	HONORORIUM	2,75,000			
To	HOSTEL EXPENSES	19,26,376			
To	INSPECTION FEE	-			
To	INTERNET CHARGES	7,80,000			
To	INTERNSHIP CHARGES	-			
To	IT PENALTIES	312			
To	JOURNALS & PERIODICALS	3,13,028			
To	LAB MAINTENANCE	-			
To	LIBRARY MAINTENANCE	1,17,000			
To	MEETINGS & SEMINARS	7,04,803			
To	MEMBERSHIP & SUBSCRIPTION	83,615			
To	MRCET ALUMNI	-			
To	MUNCIPAL TAXES	-			
To	NAAC ACCREDITION FEE	-			
To	OFFICE MAINTENANCE	4,41,626			
To	ORIENTATION DAY EXPS.	-			
To	PF CONTRIBUTION EMPLOYER	22,23,258			
To	PLACEMENT & RECRUITMENT	-			
To	PRINTING & STATIONARY	18,90,636			
To	PROJECT FEE(EXPENSES)	17,22,000			
To	Q SPIDER TRAINING(EXPENSES)	11,20,000			
To	RATES & TAXES	9,65,021			
To	R&D EXPENSES	8,60,113			
To	REPAIRS & MAINTENANCE	23,656			
To	SALARIES	24,88,64,851			
To	SDP FEE(EXPENSES)	13,28,000			
To	SECURITY SERVICES	36,70,845			
To	STAFF RATIFICATION	11,000			
To	STAFF WELFARE	2,000			
To	STUDENT DEVELOPMENT EXPENSES	6,80,000			
To	STUDENT WELFARE EXPENSES	1,50,800			
To	TELEPHONE CHARGES	2,53,779			
To	TRAVELLING EXPENSES	41,402			
To	VEHICLE MAINTENANCE	39,73,750			
To	DEPRECIATION	4,70,90,403			
	Excess of Income Over Expenditure	**17,25,99,179**			
		50,62,09,483			50,62,09,483

M S R & ASSOCIATES ★ CHARTERED ACCOUNTANTS ★ F.R.No. 014318S

For M S R & ASSOCIATES
CHARTERED ACCOUNTANTS

M. Sitaramaiah

(M. SITARAMAIAH)
Partner
M. No. 221565
Firm Reg. No. 014318S

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

BALANCE SHEET SCHDULES AS ON 31-03-2021

GENERAL FUND:	
GENERAL FUND	(18,85,42,652)
ADD: EXCESS OF INCOME OVER EXPR	17,25,99,179
	(1,59,43,473)
SECURED LOANS:	
C.BANK VEHICLE LOAN - 677360300	4,32,318
C.BANK VEHICLE LOAN - 677360300	4,32,335
HDFC VEHICLE LOAN A/C.NO:-92595	-
	8,64,653
OTHER CURRENT LIABILTIES:	
E S I PAYABLE	1,570
GRANT LIABILITY	-
GRANTS FROM DEPT OF BOI-TECHI	-
IBM STUDENT TRAINING	40,100
IEEE REGISTRATION CHARGES	9,600
N S S	1,43,450
OTHER ADVANCES	-
PF PAYABLE	1,29,226
PT PAYABLE	59,250
REMUNERATION PAYABLE	44,000
SALARIES PAYABLE	68,65,15,539
STAFF CLUB PAYABLE	2,97,750
STIPEND	-
TDS PAYABLE	1,73,000
TDS PAYABLE (CONTRACTORS)	11,381
TDS (PROFESSIONAL)	4,875
	68,74,29,741
INTER TRANSFERS RECEIPTS:	
C M R E S	(4,81,51,238)
MRCET	7,60,70,511
MRCP	7,87,14,098
MRIM	1,55,34,715
MRPC	1,90,83,733
	14,12,51,819
DEPOSITS:	
ELECTRICITY DEPOSIT	63,426
FIXED DEPOSITS	16,42,62,201
TELEPHONE DEPOSIT	-
	16,43,25,627
OTHER CURRENT ASSETS:	
FEE RECEIVABLE	21,14,49,257
INTEREST RECEIVABLE	-
LAND PURCHASE ADVANCE	-
SCHOLARSHIP RECEIVABLE	7,77,74,000
TCS RECEIVABLE	-
TCS RECEIVABLE - 2020 - 21	-
TDS RECEIVABLE	-
TDS RECEIVBLE - 2020 - 21	-
LOANS & ADVANCES (MREC-TEQIP)	99,68,164
LOANS & ADVANCES (TEQIP-MREC)	(99,68,164)
	28,92,23,257
CASH & BANK BALANCES:	
CASH	1,82,916
CANARA BANK - 6773214000031	1,70,343
CANARA BANK - 71	1,75,378
HDFC BANK A/C.NO:-5020049855331	1
ICICI BANK A/C.NO:-180701001260	1,08,256
(MRPGC)-SBI - 3066612362	1,25,103
(MRPGC) - UBI - 327401010036197	155
SBH- 62186715641(CF)	27,285
SBH - 62186715776(ERF)	1,86,858
SBH-62186715812 (MF)	12,688
SBH-62186715867 (FDF)	11,968
SBI-30666122940	1,13,518
UBI-327401010023092	16,074
UBI-711401010050001	5,59,423
UBI-711401010050009(EXAM BR)	1,13,652
UBI-711401010050010 (AUTO)	66,80,537
UBI - 711401010050033 (GRANTS)	1,10,468
UBI - 711401010050046 (PLACEMEN	21,74,036
MREC TEQIP	
Cash	18,961
SB- MG - 62218840310	3,39,979
	1,11,27,600

CHARTERED ACCOUNTANTS

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

FIXED ASSETS SCHEDULE AS ON 31-03-2021

PARTICULARS	DEPN RATE	OP. BAL 01-04-2020	ADDITIONS		TOTAL 31-03-2021	DEPREC-IATION	CLG. BAL 31-03-2021
			Bef. Sep	Aft. Sep			
LAND		18,70,000			18,70,000	-	18,70,000
AIR CONDITIONARS	15%	10,00,812			10,00,812	1,50,122	8,50,691
BUILDGING & CIVIL WORKS	10%	19,15,11,064	2,64,81,793	6,91,29,360	28,71,22,217	2,52,55,754	26,18,66,464
COMPUTERS & SOFTWARES	40%	2,08,49,737	4,30,000	67,51,824	2,80,31,561	98,62,260	1,81,69,302
ELECTRICAL FITTINGS	15%	3,76,119		11,580	3,87,699	57,286	3,30,412
FURNITURE & FIXTURES	10%	1,29,88,294	3,40,000	56,37,815	1,89,66,109	16,14,720	1,73,51,389
GENERATOR	15%	1,49,740		7,80,000	9,29,740	80,961	8,48,779
JOHN LIFT	15%	5,896			5,896	884	5,012
LIBRARY BOOKS	10%	70,27,043		1,85,387	72,12,430	7,11,974	65,00,456
LAB EUIPMENT	15%	1,84,09,112	2,52,356	36,95,799	2,23,57,267	30,76,405	1,92,80,862
OFFICE EQUIPMENT	15%	72,73,251	24,47,893	8,36,082	1,05,57,226	15,20,878	90,36,348
SPORTS & MUSICALS	15%	15,55,661	27,950	1,28,989	17,12,600	2,47,216	14,65,384
VEHICLES	15%	2,54,61,828	20,50,000	38,06,392	3,13,18,220	44,12,254	2,69,05,967
XEROX MACHINE	15%	6,64,601			6,64,601	99,690	5,64,911
		28,91,43,159	**3,20,29,992**	**9,09,63,228**	**41,21,36,379**	**4,70,90,403**	**36,50,45,976**

M S R & ASSOCIATES * CHARTERED ACCOUNTANTS *

Principal
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(Post Via Kompally), Sec'bad-500100.

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

BALANCE SHEET AS ON 31-03-2022

LIABILITIES	AMOUNT Rs.		ASSETS	AMOUNT Rs.
GENERAL FUND	15,47,23,828		FIXED ASSETS	47,41,67,098
SECURED LOANS	1,42,712		DEPOSITS	8,93,25,627
SUNDRY CREDITORS	75,37,125		PURCHASE & ADVANCES	2,14,98,893
OTHER CURRENT LIABILITIES	62,32,46,573		OTHER CURRENT ASSETS	28,84,77,087
INTER TRANSFER RECEIPTS	7,54,74,683		CASH & BANK BALANCES	1,13,76,216
TEQIP-II Grant	2,37,20,000			
	88,48,44,921			88,48,44,921

For M S R & ASSOCIATES
CHARTERED ACCOUNTANTS

M. Sitaramaiah

(M. SITARAMAIAH)
Partner
M. No. 221565
Firm Reg. No. 014318S

M S R & ASSOCIATES ★ F.R.No. 014318S ★ CHARTERED ACCOUNTANTS

Principal
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CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

INCOME & EXPENDITURE ACCOUNT AS ON 31-03-2022

	EXPENDITURE	AMOUNT Rs.		INCOME	AMOUNT Rs.
To	AICTE Grants	2,87,637	By	Fee Collections	48,15,62,000
To	Admission Fee	36,66,700	By	Admn & University Fee	1,75,29,500
To	Advertisement Charges	1,31,978	By	AICTE (Grants)	8,10,960
To	Affiliation Fee	36,38,364	By	Exam Fee(Receipts)	2,12,21,352
To	Annual Maintenance Charges	2,12,341	By	Grants Recd.	-
To	Audit Fee	6,00,000	By	Interest on FDs	-
To	Bank Charges and Interest	90,279	By	Interest Receipts	-
To	Building Maintenance	7,80,686	By	Other Income	11,46,27,200
To	Common Service Fee	34,05,000	By	Project Fee(Receipts)	20,000
To	Computer Maintenance	16,85,923	By	Reliance Jio	-
To	Consultancy Charges	87,500	By	Rent Received	4,90,000
To	Donations	25,75,000	By	Training and Placement	22,873
To	Electricity Charges	17,43,073	By	Transportation Collection	-
To	ESI Contribution	1,16,274	By	Transportation Recovery	6,15,600
To	Exam Fee(Expenses)	70,32,852			
To	Garden Maintenance	1,96,800			
To	Honororium	16,74,030			
To	Hostel Expenses	4,99,865			
To	Journals & Periodicals	9,40,534			
To	Lab Maintenance	8,44,681			
To	Meetings & Seminars	14,58,860			
To	Membership & Subscription	1,30,980			
To	Office Maintenance	3,18,386			
To	Paper Publications	2,71,000			
To	PF Contribution Employer	17,04,098			
To	Printing & Stationary	51,07,373			
To	Project Fee	3,55,800			
To	Rates & Taxes	25,880			
To	R&D Expenses	1,16,710			
To	Repairs & Maintenance	2,64,987			
To	Salaries	35,35,57,420			
To	Security Service Charges	15,35,254			
To	Staff Ratification	4,51,000			
To	Staff Welfare	59,000			
To	Student Welfare Expenses	1,56,800			
To	Travelling Expenses	18,12,682			
To	Vehicle Maintenance	76,99,228			
To	DEPRECIATION	6,09,97,208			
	Excess of Income Over Expenditure	**17,06,67,301**			
		63,68,99,485			**63,68,99,485**

For M S R & ASSOCIATES
CHARTERED ACCOUNTANTS

M. Sitaramaiah

(M. SITARAMAIAH)
Partner
M. No. 221565
Firm Reg. No. 014318S

M S R & ASSOCIATES ★ CHARTERED ACCOUNTANTS ★ F.R.No. 014318S

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100.

CMR EDUCATIONAL SOCIETY
(MALLA REDDY ENGINEERING COLLEGE)

BALANCE SHEET SCHDULES AS ON 31-03-2022

GENERAL FUND:	
GENERAL FUND	(1,59,43,473)
ADD: EXCESS OF INCOME OVER EXPR.	17,06,67,301
	15,47,23,828
SECURED LOANS:	
C.BANK VEHICLE LOAN - 677360300	71,321
C.BANK VEHICLE LOAN - 677360300	71,391
	1,42,712
OTHER CURRENT LIABILTIES:	
E S I Payable	1,525
Ibm Student Training	40,100
IEEE Registration Charges	9,600
N S S	1,54,200
PF PAYABLE	1,21,216
PT Payable	63,900
Remuneration Payable	44,000
Salaries Payable	62,16,21,875
Staff Club Payable	4,18,850
TDS Payable	7,45,759
Tds Payable (Contractors)	19,048
TDS (Professional)	6,500
	62,32,46,573
INTER TRANSFERS RECEIPTS:	
C M R E S	(8,67,05,113)
MRCET	5,08,76,761
MRCP	7,69,25,848
MRIM	1,62,68,754
MRPC	1,81,08,433
	7,54,74,683
DEPOSITS:	
ELECTRICITY DEPOSIT	63,426
FIXED DEPOSITS	8,92,62,201
	8,93,25,627
OTHER CURRENT ASSETS:	
Fee Receivable	12,38,76,695
Scholarship Receivable	16,44,21,100
Salary Advance	1,30,292
TDS Receivable	49,000
LOANS & ADVANCES (MREC-TEQIP)	99,68,164
LOANS & ADVANCES (TEQIP-MREC)	(99,68,164)
	28,84,77,087
CASH & BANK BALANCES:	
Cash	1,07,008
Canara bank - 6773214000031	49,812
Canara Bank - 71	1,52,495
ICICI-769401000097 (Training & Place	19,643
ICICI Bank-769401000025 (Eaxm Brar	18,15,867
HDFC Bank A/C.No:-5020049855331	1
ICICI Bank-769401000078 (Grants)	8,12,076
ICICI Bank A/C.No:-180701001260	(3,64,593)
(MRPGC)-SBI - 3066612362	1,25,103
(MRPGC) - UBI - 327401010036197	155
SBH- 62186715641(CF)	26,636
SBH - 62186715776(ERF)	1,86,209
SBH-62186715812 (MF)	12,039
SBH-62186715867 (FDF)	11,319
SBI-30666122940	78,13,359
SB- MG - 62218846310 - Tequip	3,39,330
UBI-327401010023092	16,074
UBI - 711401010050046 (Placement C	2,53,683
	1,13,76,216

M S R & ASSOCIATES ★ CHARTERED ACCOUNTANTS ★ FRN. No. [illegible]

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100.

CMR EDUCATIONAL SOCIETY

(MALLA REDDY ENGINEERING COLLEGE)

FIXED ASSETS SCHEDULE AS ON 31-03-2022

PARTICULARS	DEPN RATE	OP. BAL 01-04-2021	ADDITIONS		TOTAL 31-03-2022	DEPREC-IATION	CLG. BAL 31-03-2022
			Bef. Sep	Aft. Sep			
LAND		18,70,000			18,70,000	-	18,70,000
AIR CONDITIONARS	15%	8,50,691			8,50,691	1,27,604	7,23,087
BUILDGING & CIVIL WORKS	10%	26,18,66,464	6,40,31,532	6,06,42,251	38,65,40,247	3,56,21,912	35,09,18,335
COMPUTERS & SOFTWARES	40%	1,81,69,302	21,83,540	1,69,68,721	3,73,21,563	1,15,34,881	2,57,86,682
ELECTRICAL FITTINGS	15%	3,30,412			3,30,412	49,562	2,80,851
FURNITURE & FIXTURES	10%	1,73,51,389	94,75,000	13,85,000	2,82,11,389	27,51,889	2,54,59,500
GENERATOR	15%	8,48,779			8,48,779	1,27,317	7,21,462
JOHN LIFT	15%	5,012			5,012	752	4,260
LIBRARY BOOKS	10%	65,00,456	2,07,023		67,07,479	6,70,748	60,36,731
LAB EUIPMENT	15%	1,92,80,862	21,89,831	81,59,566	2,96,30,259	38,32,571	2,57,97,687
OFFICE EQUIPMENT	15%	90,36,348	27,11,886	17,89,180	1,35,37,414	18,96,424	1,16,40,991
SPORTS & MUSICALS	15%	14,65,384	1,00,000	1,74,800	17,40,184	2,47,918	14,92,266
VEHICLES	15%	2,69,05,967	1,00,000		2,70,05,967	40,50,895	2,29,55,072
XEROX MACHINE	15%	5,64,911			5,64,911	84,737	4,80,174
		36,50,45,976	**8,09,98,812**	**8,91,19,518**	**53,51,64,306**	**6,09,97,208**	**47,41,67,098**

M S R & ASSOCIATES * CHARTERED ACCOUNTANTS * FRN No. 014318S

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100.

To
The Principal
Malla Reddy Engineering College (MREC)
Misammaguda, Hyderabad

Sir,

Sub: Project on development of Face recognition using drones by Telecom technology – technical support request reg.

Reference to your email dated 12-11-2022 we are happy to know that MREC is planning to take up project on Face recognition using drones by Telecom technology funding agency.

We herewith give our consent for cooperation in implementation of above project.

Thanks and Regards

For **Vodafone Idea Ltd**

Authorized Signatory

Reinv Labs
Innovative Researches

GST NO: 37BKJPK7555A1Z3

Letter of Interest

RIL:04/NOV/22

To
The Principal
Malla Reddy Engineering College (MREC)
Misammaguda, Hyderabad

Dear Sir,

Sub: Development of a project on face recognition using telecom technology – Technical support

Reference to your email dated on 10-11-2022 we are happy to know that MREC is planned to take new project on Face recognition using drones by Telecom technology funding agency.

We herewith give our Interest in executing project with your cooperation in implementation of above project. Kindly do the needful to get this executed in time to better for the future relation. We have a good team to support in all forms.

Thanking You

Best regards

Founder

For REINV LABS

K. Mehar Sasikanth

Proprietor

K. Mehar Sasikanth

V & O: REINV Labs, Brodipet 2/17 lane Guntur ||AP: 522002 | meharsasikanth@reinvlabs.com
R&D LAB: NIT Warangal, Warangal. || TS: 506004 | prakash@reinvlabs.com

Unistring Tech Solutions Pvt. Ltd.
GSTIN: 36AABCU8691B1Z7
CIN: U72200TG2007PTC052628

Letter of Consent for support

To
The Principal
Malla Reddy Engineering College (MREC)
Misammaguda, Hyderabad

Sir,

Sub: Project on development of Face recognition using drones by Telecom technology – technical support request reg.

Reference to your email dated 12-11-2022 we are happy to know that MREC is planning to take up project on Face recognition using drones by Telecom technology funding agency.

We herewith give our consent for cooperation in implementation of above project.

With Regards

Dr S Nagendra Babu
Executive Director
Unistring Tech solutions Pvt ltd