List of Completed RESPOND Projects as of January, 2025

Sr No	Research Title
1.	3D reconstruction and software development for city model generation from satellite images
2.	A Compact Low-volume Dielectric Resonator Antenna Loaded with Metamaterial Structure for Small Satellite Application
3.	A cost-effective smart antenna for mobile broadband applications
4.	A High-Speed SAR Analog to Digital Converter (ADC) with low distortion sample-hold front-end
5.	A local short term model for forecasting Ionospheric Scintillations for GNSS applications over Indian Region
6.	A Novel Mach zehnder Modulator based integrated Photonic highly Steerable Beam-forming system for Broadband Satellite Communication Link
7.	A Remote Sensing and Rock Magnetic Based Integrated Tectonic Study in parts of South Eastern Rajasthan
8.	Active vibration control of laminated shells
9.	Adaptive Beam Forming for Mitigation of Interference and Jamming at the Ground Terminal of Global Navigational Satellite Systems (GNSS)
10.	Analysis and design of Wide band Microstrip Antenna
11.	Analysis and development of Matched Feed for offset parabolic antenna system
12.	Analysis and Performance Enhancement of Graphene Plasmonic Antennas
13.	Analysis of Dielectric Resonator Antenna Array
14.	Analysis of Microstrip Radiator using Particle Swarm optimization technique
15.	Analysis of Radiation from Multidevice High Gain Amplifier and Interaction of Active MMIC with Package / Housing - Theory, Analysis and Measurement
16.	Analysis of Satellite Derived wind and wave parameters for Coastal Waters off Karnataka
17.	Antipodal Linear Tapered Slot Antenna (ALTSA) array design and development for Inter-satellite communication at 60 GHz
18.	Application of Remote sensing techniques in assessment of landscape dynamics along the Indo-Myanmar Ranges.
19.	Applications of Chaos Theory to 2-D Interpolation of Irregular Data set and Image Compression

Sr No	Research Title
20.	Archaeological Investigations using remote sensing techniques
21.	Assessment of the Zooplankton community structure and secondary productivity in the Chennai and Portonovo, Northern coast of Tamil Nadu
22.	Assessment of Vegetation Phenology with Optical and Microwave data
23.	Bay of Bengal Tropical Cyclone Movement and Intensity Estimation Using Numerical Model and Satellite Data
24.	Capacity, Bit Error rate and performance evaluation of MIMO based communication system on minimized Multipath environment
25.	CDMA code design, Link-level simulation, and Interference analysis for IRNSS-based SatNav receivers
26.	Characterization of Aerosols, Black Carbon and Radiative Forcing over Urban Environment of Ahmedabad and Gandhinagar City, Gujarat India
27.	Classification of hyperspectral Remote Sensing Data to discriminate between crop condition variety and stage
28.	Classification of Satellite Images using Cellular Automata
29.	Combining Hyperbolic and NavIC navigation algorithms for attitude control of ship in floating dry dock
30.	Conformal array synthesis using evolutionary algorithms for the generation of a shape beam antenna for data transmission
31.	Control of flexible and reconfigurable Parabolic Antenna using SMA based smart actuators
32.	Cotton Growth and Yield Modeling Using Spectral Agromet Observation and GIS
33.	Crown counts of Trees growing in Shoolpaneshwar Sanctuary by using Hyperspectral Sensing
34.	CRUSDE – Crustal deformation studies of parts of South India using RS & GPS
35.	Design & Demonstration of a set of algorithm for High Reliability Wireless Data Acquisition & Control
36.	Design & Development of a Proof-of-Concept Model of an Adaptive Membrane
37.	Design and analysis of an Integrated optic microring resonator array based sensor system for detection of multiple gases

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38.	Design and Analysis of Frequency Selective Surface at Ka/Ku Band for Reflection and S Band for Transmission
39.	Design and development of 32-bit RISC processor based IP Core for space applications
40.	Design and development of a miniaturized Dual-Band / Tri-Band antenna using Negative Refraction Index technique
41.	Design and Development of a Proof-of-Concept Model of a Packaging Methodology & Rigidization for Gossamer Space Antenna Structures
42.	Design and development of a Scalable Framework for Geospatial/Geoscience Data Ingestion, Ad-hoc Queries and analysis on Big Data Environment
43.	Design and Development of key exchange mechanism for High Security Applications
44.	Design and development of Low insertion loss narrow band Surface Acoustic Wave (SAW) Filters on Quartz substrate at VHF & UHF for satellite communication
45.	Design and Development of Optimized Miniature Antenna Modules with duality function for Inflatable Satellite Antenna Setup
46.	Design and development of registration & Super Resolution Reconstruction (SRR) techniques for remotely sensed images
47.	Design and Development of Scalable Data Mining Algorithms for Big Earth Data
48.	Design and development of Spatio-Temporal data mining techniques and software framework for Earth observation data
49.	Design and development of Substrate Integrated Waveguide (SIW) based circular polarized high gain slot array antenna for satellite communication
50.	Design and Development of Wideband Circularly Polarized Antenna using 2D Metamaterial Structures
51.	Design and development of X-band dual polarized waveguide slotted array antenna
52.	Design and fabrication of large deflection MEMS Bimorph element for Tunable filters
53.	Design and implementation of Dual blind detection Robust watermarking for multimedia security in FPGA
54.	Design and implementation of security attributes driven energy-efficient link layer architecture for wireless sensor networks
55.	Design and simulation of a new Energy Efficient ML-MAC Wireless Sensor Protocol

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56.	Design and Simulation of Beamforming Algorithms and Baseband Technologies for SATCOM On the Move (SOTM) Networks
57.	Design and Simulation of Physical Layer and Medium Access Control (MAC) Layer Functionalities of Future Mobile Satellite Systems
58.	Design and study of Nano and micro displacement sensor based on Photonic Crystal Fiber modal interferometer
59.	Design of 0.18μm CMOS Dual band Low Noise Amplifier (LNA) for IRNSS Applications
60.	Design of an algorithm for Urban feature extraction and classification for satellite Image
61.	Design of Radiation Hardened by Design (RHBD) standard cell Library for 0.18μm technology
62.	Design of Ultra Low Power CMOS (Complementary Metal Oxide Semi-Conductor) temperature sensor for aerospace applications
63.	Design of Ultra Low-Power FHSS Transceiver for Wireless Communication Applications
64.	Design of urban storm water drainage system for Jorhat Town (Assam) and its suburb using GIS and Remote Sensing
65.	Design optimization of Multilayer Microstrip Antennas using Artificial Neural Networks
66.	Design, Development and Hardware implementation of BPSK, QPSK and other modulation schemes as part of Software Defined Radio (SDR)/Cognitive Radio (CR), for use in Satcom terminals
67.	Design, Fabrication and Characterization of Uncooled Microbolometer for IR Imaging Applications
68.	Designing of SLMs based on Nematic Liquid Crystals Doped with non-mesogenic molecules (Polymer, Nano-Particle and Dyes)
69.	Detecting, locating, identifying and documentation of the monuments and cities of the Eastern Vindhyas using Remote Sensing
70.	Developing an Adaptive Neuro-Fuzzy Inference System (ANFIS) based CAD Tool for Designing a Corrugated Horn Antenna
71.	Development and Testing of NavICSuite: Processing Software Tool for NavIC Receiver
72.	Development of a remote sensing and GIS based approach for flood forecasting and warning for Lower Tapi basin

Sr No	Research Title
73.	Development of advanced Fractional Transform based algorithm for Satellite Image Compression, Encryption, Digital watermarking and Image Matching Applications
74.	Development of advanced nano ZnO sensors for Atmospheric and Environmental monitoring
75.	Development of algorithms for Narrow Band Interference reduction in IRNSS received signal.
76.	Development of Approaches for Geometric, Radiometric and Atmospheric Correction of Remote Sensing Data Products for Multidate Data Analysis
77.	Development of Automated Web Based Online Feature Tracking system using Shape Adaptive Curvelet with PCA and Haralick Texture Feature
78.	Development of Early Warning System for Shallow Landslides-using Rainfall thresholds
79.	Development of ESD I/O Pads for CCD Image Sensor for 0.18um SCL Foundry
80.	Development of Fusion Algorithms for Remotely Sensed Satellite Images in Cartographic Applications
81.	Development of High Voltage (HV) devices for CCD clock drivers
82.	Development of Image and Signal Processing Algorithms on leading DPS Processors and development of special purpose FPGA for co-processing
83.	Development of Land Cover Classification Methodology with Fusion of Data from Different sensors
84.	Development of Microwave Absorber (Carbonyl Iron Filled Silicon Rubber Sheets) in 1 to 8 GHz range
85.	Development of Microwave Dielectric Resonators and High K MIC Substrates
86.	Development of Mutimodal interface for information retrieval in regional language from database
87.	Development of passive damping surface coating for advanced materials based structural system using PZT (Piezo) powder
88.	Development of Protocol for Vector borne Schistosomiasis using RS and GIS
89.	Development of regional language interface for information retrieval from databases
90.	Development of Reinforced Aerated blocks with innovative composite ingredients as compression members for structural applications with stringent design specifications

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91.	Development of Remote Sensing and GIS based decision support for mine closure in Singrauli coal fields
92.	Development of SDR based GNSS Receiver
93.	Development of Space Qualified High Temperature Super Conducting thin films Microwave Applications
94.	Development of Texture based features for landuse classification
95.	Development of Time Weighted Dynamic Time Warping (TWDTW) Algorithm for Analysis of Vegetation Dynamics using Time-Series Vegetation Index Data from Earth Observation Satellites
96.	Development of tools for hybrid-Polarimetric SAR data analysis and applications
97.	Development of Ultra Low Power and Low Voltage Time to Digital Converter (TDC) for Space Applications
98.	Development, Testing and Characterization of 1m Dia Ku-Band P.E.E.K parabolic reflector with and without Metallization for Spacecraft Applications
99.	Dimensionality reduction of Hyper-spectral remote sensing data
100.	Dual Blind Detection Robust watermarking for Multimedia security
101.	Dynamics of Urban Pollution : A Curative Strategy Using RS and GIS Techniques - A Case Study of Megacity Delhi
102.	Earthquake Damage Scenario Analysis for Chennai city using Remote sensing & GIS techniques
103.	Effect of different types of land use patterns on local scale meteorological phenomena with an emphasis on future projected scenario
104.	Efficient Download Transmission, Error correction and Encryption techniques for IRNSS data
105.	Electronically stitched large format cameras
106.	Elucidation of the deformation signatures and fluvial activity near junction of Noachis Terra with Margaritifer and Arabia Terra
107.	Estimation and modeling of suspended sediments transport and coastal dynamics in the coastal waters of southern Karnataka
108.	Estimation of Crop Water Productivity (CWP) in the major River basins of Tamilnadu using Geospatial technology
109.	Estimation of Rain parameters from Doppler Radar

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110.	Experimental Studies on tropospheric scintillation and associated rain attenuation for SATCOM links over North Eastern India (Sikkim) at Ku/Ka-Band
111.	Extended Depth of Field Imaging using Coded Camera Architecture
112.	Faradey rotation correction for MSMR 6 GHz data
113.	Feasibility studies on development of surface integrity and strength characteristics of rapid prototyped components to enable their direct application in design and development activities of payload for spacecraft
114.	Feasibility studies on enhancing detector efficiency with structured plasmonic films
115.	Flood Risk Modelling Using Satellite Remote Sensing Data for Optimal Crop Planning
116.	Fractal Image Compressing Using Neural Network
117.	Friction Stir Welding (FSW) of Aluminum Alloys used in Space Application (6061 T6, 2195 & 7050)
118.	Gated photodiodes for single photon detection in CMOS technology
119.	Geospatial Technology for Mineral Exploration program in Singhbhum Shear Zone (SSZ) of Jharkhand
120.	Geotechnical investigation of land instability in Kohima Town and along N.H. 39, between Chumukedima and Kohima
121.	GIS based Early warning landslide susceptibility model using data mining classification approach
122.	Government Agency Initiatives for Scientific Research Management with special reference to Institute/University Interface
123.	Grid based application development for satellite image processing
124.	Growth and characterization of pure & substituted Langasite crystals for development of high temperature SAW devices suitable for space applications
125.	Habitat adaptability and habitat bio-diversity of malaria causing mosquito Anopheles culicifacies : Development of information retrieval protocol using sate. Data
126.	Habitat Suitability and Corridor analysis for Sloth Bear in Gujarat using Remote Sensing and Ecological Modelling
127.	High resolution Indian Ocean State estimation
128.	Impacts of land use changes on human-primate conflict in India

Sr No	Research Title
129.	Implications of Satellite Imagery on Cultural Heritage Resource Management
130.	Improvement in size uniformity of self assembled InAs Quantum Dots on GaAs substrate by rapid thermal annealing
131.	Information extraction from multi-polar radar data
132.	Integrated Post cyclone impacts on the chlorophyll biomass in the central and Western Bay of Bengal
133.	Integration of NAVIC receiver with mapping services
134.	Investigations on multi-band Fractal Antennas for satellite applications
135.	Ionospheric studies using IRNSS Receivers and Comparison with other GNSS
136.	Ku/Ka band channel modeling for SATCOM links over Indian Region
137.	Ku-band Tx/Rx transportable reflect array Antenna for satellite communication
138.	Land use Planning and Management of Natural Resources of Dhar Distrct through Remote Sensing
139.	LITHYPER – Lithological Descrimination using hyperspectral data and it's comparative Evaluation with Satellite Data
140.	Mathematical Modeling of Spectrum Sharing Techniques in Cognitive Radio Network
141.	Micro level planning of Forest resources Development using high resolution IRS-1C/1D Satellite data
142.	Modeling and Controller Design for Active Clamp Forward Converter with Multiple Outputs used as Electronic Power Conditioner (EPC)
143.	Modeling of Chlorophyll-a (Chl-a) Dynamics of the Eastern Arabian Sea : Biophysical coupling in the Context of change in climate
144.	Modeling of Rain Drop-Size Distribution and Attenuation at SHF/EHF Band for Indian Regions
145.	Monitoring of Flamingo's Traditional Ground and Evaluation of Altemate Breeding Ground for their Conservation Through Remote Sensing
146.	Monsoon onset over Kerala and its variabilities
147.	Morphodynamic study of the Digha coast of West Bengal for sustainable development and erosion mitigation using remote sensing and GIS techniques

Sr No	Research Title
148.	Morpho-tectonic evaluation of the KOSI river basin, Bihar using remote sensing data
149.	Multi-criteria Spatial System for Evaluating Environmental Impacts of Land use change in Urban and Peri-urban limits using Remote Sensing and GIS
150.	Neuro-Fuzzy Synergism based POLSAR Image Classification
151.	Noncontact Multidirectional Vibration Sensor using 2D Position Sensitive Detector (PSD)
152.	Oceanic Pollution and other ocean phenomenon monitoring using feature extraction from multi-polarized SAR data
153.	On-orbit Characterisation of Space-born Synthetic Aperture Radar (SAR) Performance using ground deployed Corner Reflectors
154.	Ontology Driven Meteorology Conceptual Data Dissemination through Open Geo-Spatial Consortium (OGC) web services
155.	Ontology-based semantic annotation generation and retrieval of images using multiple sub ontologies
156.	Optical flow-based prediction of Visual storms from satellite image sequences
157.	Optimal Cluster Detection over high resolution satellite Imagery and its application
158.	Orbit parameter refinement using GNSS carrier phase data in post facto scenario for Interferometric SAR and Pol InSAR applications
159.	Parallel data structure and algorithms for image processing Problems
160.	Performance enhancement of circularly polarized planar/dielectric resonator antennas using defected ground structures
161.	Photonic Microwave Arbitrary Waveform Generation with Adjustable Chirp Parameter based on Remote Sensing Applications
162.	Predicting Flood Inundation using Remote Sensing & GIS Techniques : A case Study of North Bengal
163.	Predicting Reliability and Optimal release time of various categories software systems
164.	Prediction of offshore and Nearshore wave climate and sediment transport along the east coast of India Using MSMR
165.	Process Development for minimization of spring back deformation and enhancement of Profile accuracy for Carbon Fiber Reinforced Polymers (CFRP) reflectors

Sr No	Research Title
166.	Quantitative Study of the Evolution of Mesoscale Convective Systems by Doppler Weather Radar and its application in Precipitation nowcasting
167.	Rain fade mitigation for Ka Band communication satellite
168.	Reconstruction of 3D objects from stereo space Imagery for development of city models
169.	Reliability based Soft Decision Decoding of Turbocodes for Satellite Communication
170.	Reliable and secured space communication based on fundamental cut-sets and fundamental circuits in Graphs
171.	Robust Video Streaming using H.264 Scalable Video Coding over Mobile Broadband Networks
172.	RS-GIS studies for Biodiversity Characterisation at Landuse level in Jharkhand Forests
173.	Satellite based assessment of fire severity and validation in Uttarakhand
174.	Satellite based study of coastal dynamics and its impact on Long term Shore line changes along the coast between Honnavar and Bhattcal, Uttar Karntaka
175.	Satellite Network Simulator (SNS) with ULPC and ACM features
176.	Scintillation effect on Navigation receivers and alleviation technique using Kalman filter based PLL (Phase Locked Loop)
177.	Secured data transmission for space communication over Elliptical Curve Cryptography
178.	Sediment budget and estuarine dynamics along the West Coast of India: Implications for Coastal Hazards Management - A Case study of Gangolli estuary, Near Kundapur, Karnataka
179.	Simulation and analysis of system design requirements for ground to satellite and inter satellite free space optical communication link
180.	Simulations on Differential IRNSS and RTK receiver
181.	SIRMI - Strengthening IRNSS receiver by mitigation of Interference
182.	Situating Scientific Environment and Institution Building in India : Vikram Sarabhai & his Times
183.	Software framework for hosting Application Programming Interface / Modules for Artificial Intelligence, Heterogeneous Parallel Computing and Device Drivers for various scientific equipment in ex-planetary vehicle to the end/remote user
184.	Space education for school and communities

Sr No	Research Title
185.	Speckle noise reduction in SAR images using Neuro-Fuzzy approaches for coastal zone change detection and monitoring
186.	Study and Optimization of Microstrip Antenna System to receive satellite link from moving trains
187.	Study of Radar Bright Band height
188.	Study on Higher order modes of Microstrip Antennas
189.	Study on the heat transfer characteristics of low melt alloy encapsulated PCM for Satellite avionics thermal management
190.	Synthesis of algorithm from multiple orbiting satellites towards operational high resolution soil moisture estimation-HighRes-SM
191.	System design for Ground based Beam Former
192.	The feasibility of bandwidth enhancement of reflectarray antenna at Ku band for conventional and shaped beams
193.	The Study of Pollution Mechanisms in Urban aquifers of Bruhat Bengaluru Mahanagara Paalike (BBMP) area by integrated Geophysical, Remote Sensing and GIS techniques
194.	Thermal Management of Space Electronics using Multi-turn Pulsating Heat Pipes (PHP)
195.	Ultra wide band Dielectric Resonators Antenna
196.	Urban Disaster Management and Emergency Response
197.	VHDL Implementation of Efficient Trelli's coded spatial modulation scheme for MIMO communication
198.	Visible-IR and XRF spectroscopic studies of Lunar Analogues
199.	Vision guided Auto-Lander for Planetary missions
200.	Wave modelling for North Indian Ocean using SAR and MIKE-21
201.	Wavelet based image compression / decompression with pipelined architecture on FPGA
202.	Wireless optical signaling based Inter-satellite tracking and monitoring for high data rate communication