रक्षा मंत्रालय
MINISTRY OF
DEFENCE

सत्यमेव जयते

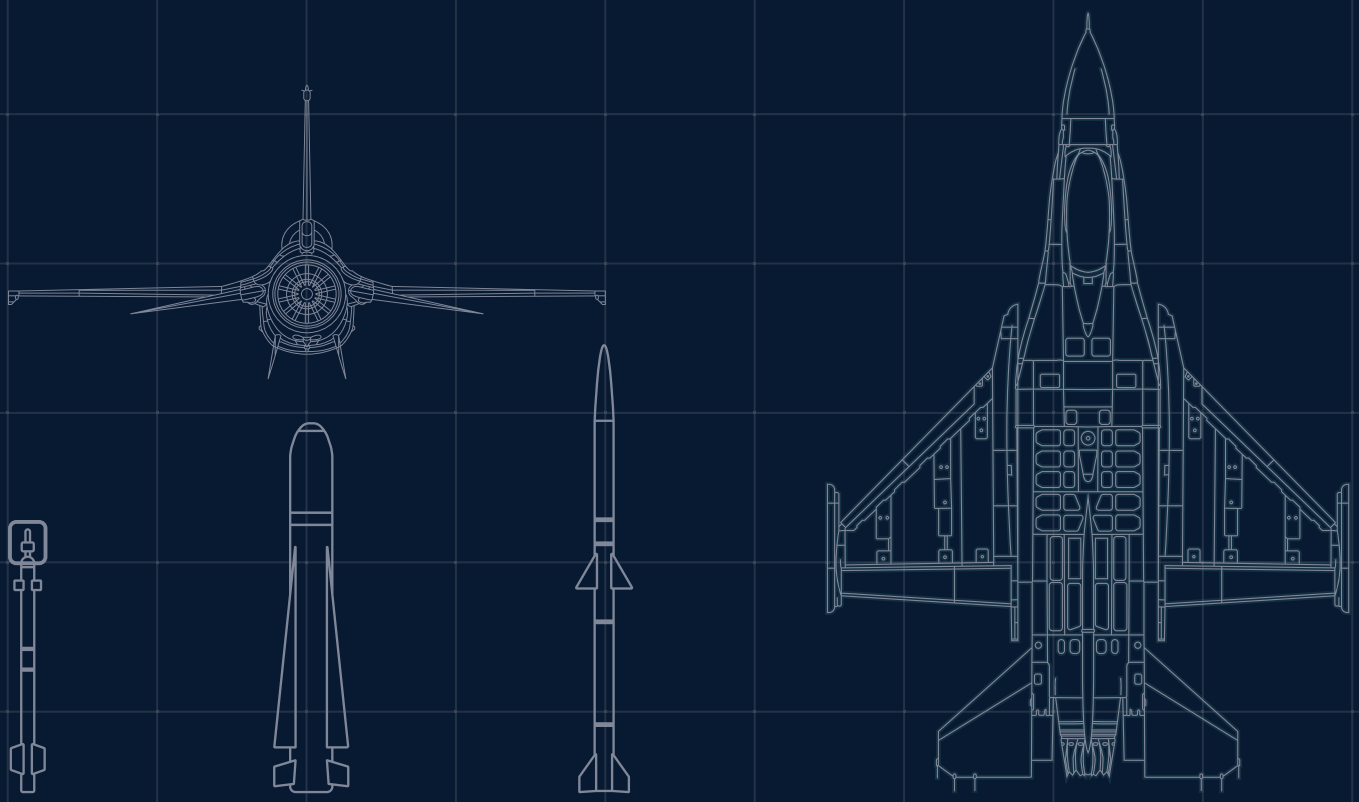
DRDO

TECHNOLOGY
DEVELOPMENT FUND

Azadi Ka Amrit Mahotsav

DARE TO DREAM INNOVATION CONTEST

GIVING WINGS TO INNOVATIONS IN DEFENCE & AEROSPACE



Secretary's Message

Dr G. Satheesh Reddy
Secretary, Department of Defence R&D
Chairman, Defence Research and Development Organisation

Defence Research and Development Organization (DRDO) had launched its innovation contest "Dare to Dream 2.0" on the 5th death anniversary of former President and noted scientist Dr. APJ Abdul Kalam.

The scheme has been launched to promote the individuals & startups for innovation in defence and aerospace technologies in the country after the idea of 'Atmanirbhar Bharat' given by Prime Minister Shri Narendra Modi. The need for achieving self-sufficiency in defence production was highlighted by Prime Minister's clarion call on 'Atmanirbhar Bharat Abhiyan' and five pillars of Atmanirbhar Bharat were identified as economy, infrastructure, systems, vibrant demography and demand'.

Through the Dare to Dream initiative, we have been able to provide the right thrust to propel the ideas of our nation's innovators to reality. It serves the dual purpose of achieving self-reliance and reducing the burden of imports. We hope that the unique opportunity presented to innovators in the nation through 'Dare to Dream', we can bring their designs and ideas to life and strengthen the defense industrial base of the nation with time. The Dare to Dream initiative promises to offer an open platform for innovators in the defense technology domain to interact with DRDO experts and stakeholders for realization of out-of- the-box ideas.

Dare to Dream and Technology Development Fund also offers additional benefits that create an inclusive ecosystem for Micro, Small and Medium-Sized Enterprises (MSMEs) and start-ups through the invitation, award and execution of the projects generated based on our defence needs. Dare to Dream in particular, allows for innovators to express themselves freely and create new advancements without being limited by the strict contours of a specified product".

What is **Dare to Dream?**

Dare to Dream Innovation Contest has been launched to unearth disruptive ideas and concepts in emerging technologies identified by DRDO to enhance defence capabilities and subsequently promote individuals & start-ups for innovation in defence and aerospace technologies in the country after the effectuate clarion call of 'Atmanirbhar Bharat' given by Hon'ble Prime Minister Shri Narendra Modi. The concept of this contest pivots around Dr. APJ Abdul Kalam's vision of Self-Reliant India and therefore it is an open challenge for innovators and startups to develop advanced technologies for innovation in Aerospace and Defence sectors in the country.

The contest is envisaged to empower a culture of technology co-creation and co-innovation within the defence and aerospace sector and boost innovation among the start-ups and encourage them to be a part of the ecosystem. Any individual innovator who is an Indian citizen, above 18 years of age and Startups that are recognized by DPIIT, having Indian founders are eligible to participate in the contest.

CASH GRANT STRUCTURE FOR THE INDIVIDUAL AND START-UP CATEGORIES WINNERS IS GIVEN BELOW

1st

INR 5 lakh Individual

INR 10 lakh Startup

2nd

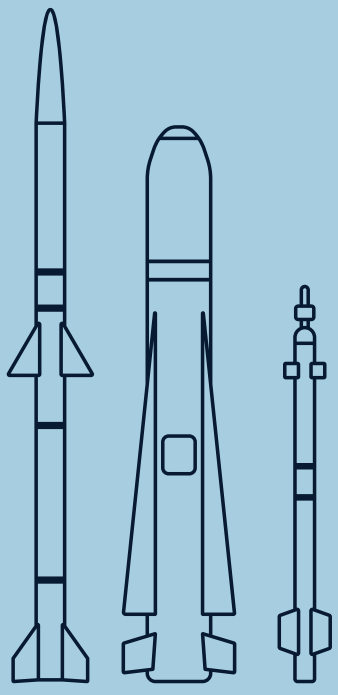
INR 4 lakh Individual

INR 8 lakh Startup

3rd

INR 3 lakh Individual

INR 6 lakh Startup



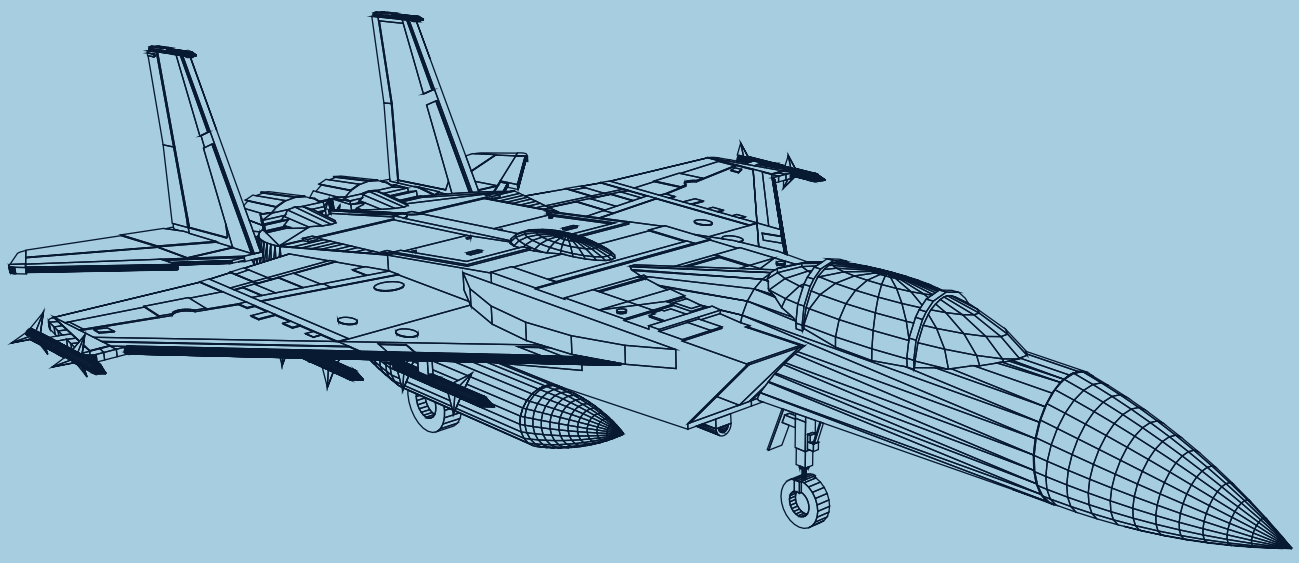
Selection **Process**

The entries received are judged by a five-stage process:

- Screening of application by Domain Expert Committee
- Shortlisted applications further go to the Independent Expert Committee chaired by Dr. S. S. Sundaram for evaluation.
- Conducting Pitch sessions for better understanding of the solution presented by participants.
- Ranking of solutions by Independent Expert Committee based on evaluation matrix.
- Announcement of winners.

Benefits to **Winners**

- **Cash award of up to 10 lakhs for Start-ups and 5 lakhs for individuals.**
- DRDO will provide further mentoring and management support in developing their technologies.
- **Access to DRDO Labs** expertise and resources.
- Encourages the recipients to pursue further research in the chosen field.
- **Recognition** of awarded individual and start-up.
- An opportunity to participate in the Start-up Scheme by DTDF,
- **DRDO and get financial assistance up to 1 Crore** for proof of concept, prototype development and trials.
- **Create a culture of engagement** with innovative startups and individuals and assist in facilitation of rapid development of new, indigenized, and innovative technologies from ideation to prototype development and testing for the Indian defence and aerospace sector.
- **DRDO will assist in commercialisation** of the technology developed.



Engagement of Startups through **TDF**

Technology Development Fund (TDF) has been established to promote self-reliance in Defence Technology as a part of the 'Make in India' initiative. The scheme encourages participation of industries especially MSMEs and Startups for development of technology & product having potential use for the Services to be done in a period of 24 months and create an eco-system for enhancing cutting edge technology capability for defence application by inculcating R&D culture in the industry. The funding to the industry of up to 10 Crores is through provision of grants, subject to a maximum funding of 90% by TDF.

DTDF in an effort to further encourage these industries to develop indigenised technology and contribute to defence and aerospace ecosystem, it has started a new initiative for engagement of start-ups that aims to provide financial assistance to startups for proof of concept, prototype development and trials for requirements of **Ministry of Defence (MoD) with project cost up to 01 Crore.** The core objectives are:

- **Facilitate rapid development of new, indigenized, and innovative technologies** from ideation to prototype development and testing for the Indian defence and aerospace sector, to meet needs for these sectors.

- **Create a culture of engagement with innovative start-ups, and empowering** youth of the country encouraging them to join the defense D&D (Design & Development) ecosystem.

- The requirements will have estimated development Cost **upto 01 Crore Indian Rupees or less.** As a special head, the requirements will be open only to Start-ups and in case, no Start-up qualifies for the Expression of Interest (EoI), all start-ups will be considered for the evaluation for awarding of the project.

Independent Expert Committee

As a part of selection process, Independent Expert Committee was formulated for evaluation of Dare to Dream Innovation contest 2.0 entries chaired by **Dr SS Sundaram, Ex DG (ECS)** consisted of following experts assessing individuals and start-ups with their technical expertise and experience:

Dr SS Sundaram
Ex DG (ECS)

Dr MRM Babu
Director ASL

Sh. Sunil K Sharma
Former CMD, BEL

Smt. Nidhi Bansal,
Director, TDF

Prof. Hari Kumar
IIT Madras

Prof. Ramesh Kumar,
IIT B

Prof. Krishnanendu Sinha, IIT B

Sh. Bhautesh Kumar,
Uflow

About **Dare to Dream 2.0**

After a resounding response in the first edition, it was decided to extend this contest further in the pursuit of discovering newer cutting-edge technologies which will foster innovation and contribute to India's growth story in the defence sector and be step towards technological self-reliance as envisioned under Atmanirbhar Bharat. 'Dare to Dream 2.0' was launched on the 5th death anniversary of former President and noted scientist Dr APJ Abdul Kalam, also known as missile man, who envisioned Self-Reliant India.

SNAPSHOT

11 Challenge Areas

Registration
9195 Individual
533 Start-ups

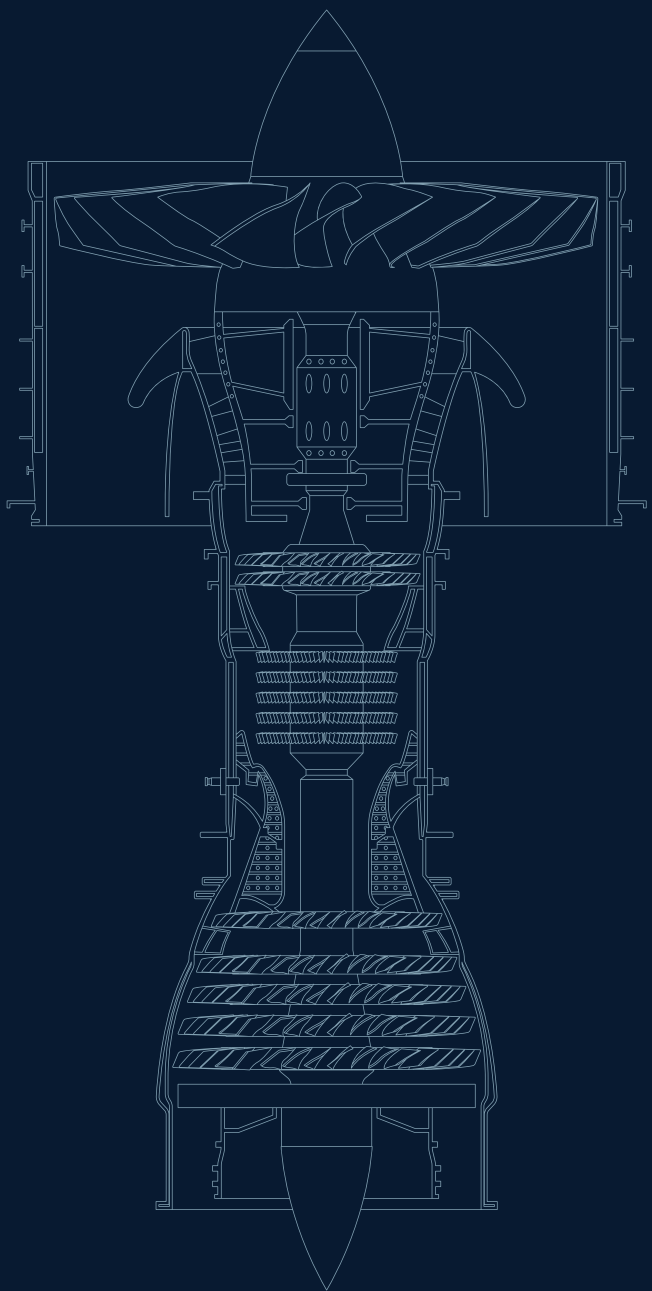
Applications
1363 Individual
375 Start-ups

INR 1 Crore 91 Lakhs
Worth of grants awarded

40
Technologies recognized

Challenge Areas for **Dare to Dream 2.0**

- Detection & Classification of Low Probability of Intercept Radar Signals for Electronic Support Systems
- Eco-friendly Explosive Waste Management
- Development of Robotic Arm for Scooping / Machining of Cured Solid Propellant (Shore 'A' Hardness ≥ 70)
- Underwater MEMS Acoustic Vector Sensor
- Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- Materials & Technologies for Fire Suppression/ Protection
- Artificial Intelligence Based Detection of A Person Based on Physiological Parameters.
- Development of Neuromorphic Vision Sensors (Design, Fabrication of Sensors and Image Reconstruction Algorithms
- Distributed Fiber Optic Sensor Interrogator
- Low powered Tethered UAV
- Open Category: Exploring the Unthinkable and Unimaginable



Dare to Dream 2.0 **Winners**

The winners of Dare to Dream 2.0 in the individual and startup categories along with the details of their technologies is showcased below

Start-up

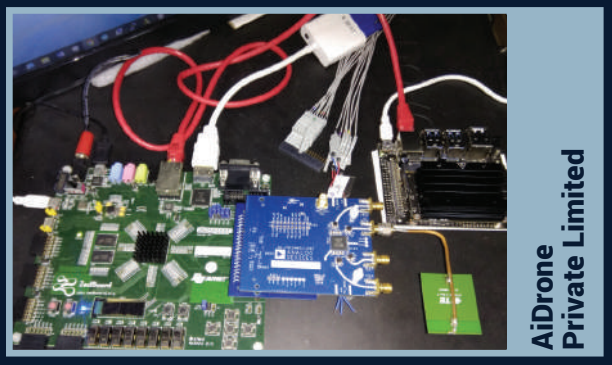
Challenge Area- Detection & classification of low probability of intercept radar signals for electronic support systems

Name of the Innovation- AI based SDR for LPI Radar Detection & Classification

Citation- AI based SDR (Software Defined Radio) for LPI Radar Detection & Classification

- AI based agile system with ultimate programmability & on-board autonomy GPU/FPGA/CPU on-board heterogeneous computing platform
- Mechanical & Electronic Beam Steering provided Hemispherical Horizon Coverage
- Zero IF Wide band Spectrum Acquisition Technology
- Adaptable field reconfigurable system design with multi waveform detection capability

Mr. Joji John Varghese



AiDrone Private Limited

Prize: 1st

Cash Reward: 10 Lakhs

Greyeast Technologies Pvt. Ltd.

- **Challenge Area-** Eco-friendly Explosive Waste Management
- **Name of the Innovation-** EffluePureX: A bioremediation solution to treat explosive wastes
- **Citation-** EffluePureX is a specially designed bio culture to tackle difficult to degrade explosive waste generated in explosive waste manufacturing. EffluePureX consists of diversity of organisms catalyzed by proprietary enzyme formulation. Everyday in India, 76000 Million litres of effluent is discharged which if reused can solve problem of domestic water supply and improve farm yields. Our aim is to impact this situation in a most sustainable way we can thereby empowering industries to achieve a circular economy.

Mr. Atharva Patankar

Greyeast Technologies Pvt Ltd

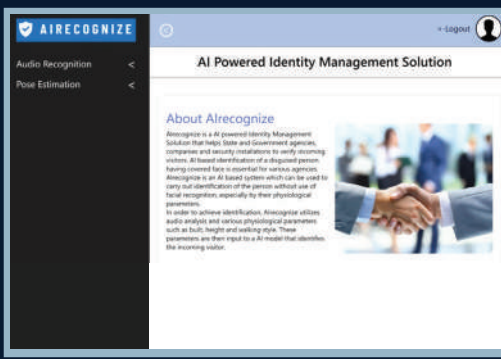
Prize: 1st

Cash Reward: 10 Lakhs

FRSHR

- **Challenge Area-** Artificial Intelligence based detection of a person based on physiological parameters.
- **Name of the Innovation-** AIRecognize - AI Powered Gait & Audio Recognition for Person Identification
- **Citation-** AIRecognize - AI Powered Gait & Audio Recognition
- **Gait Recognition-** Kinect Sensor's Gait Data is used to identify unusual patterns in video footage and close matches from existing database are identified.
- **Audio data -** is further used to identify close matches from the database. Results from both Audio and Video channels are combined for greater accuracy in detection of person.

Mr. Narendra Lokwani



Frshr Technologies Pvt Ltd

Prize: 1st

Cash Reward: 10 Lakhs

- **Challenge Area-** Low Power Tethered UAV
- **Name of the Innovation-** Apaar drshti vaayu-yaan
- **Citation-** अपार दृष्टि वायु-यान (Apaar drshti vaayu-yaan)is an indigenously developed unmanned aerial system embedded with on board redundant accelerometers, gyro, magnetometers, navigational sensors, FHD resolution camera for unlimited surveillance using the power from ground with minimum transmission losses.

Mr. Narendra Lokwani

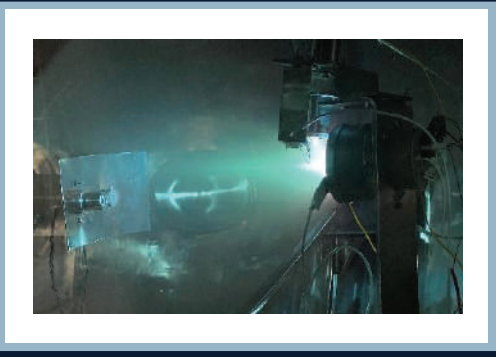
Sagar Defence Engg Pvt Ltd

Prize: 1st

Cash Reward: 10 Lakhs

- **Challenge Area-** Open Category: Exploring the Unthinkable and Unimaginable
- **Name of the Innovation-** Air Breathing Electric Propulsion for Very Low Earth Orbit Surveillance Satellites
- **Citation-** Today, most satellites operate at altitudes >400km and achieve sub-meter resolution. Surveillance from VLEO orbits will improve resolution and reduce cost and mass/volume. Bellatrix is developing next generation electric propulsion technologies that allow satellites to operate at these altitudes.

Mr Rohan M Ganapathy



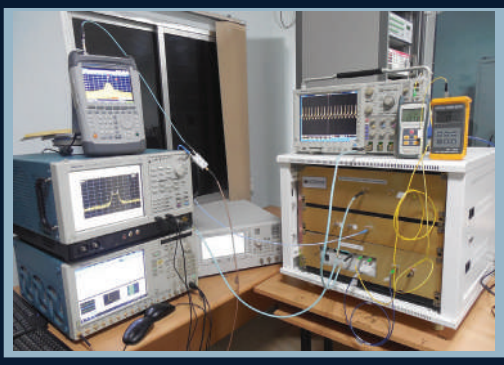
Bellatrix Aerospace Pvt Ltd

Prize: 1st

Cash Reward: 10 Lakhs

- **Challenge Area-** Detection & classification of low probability of intercept radar signals for electronic support systems.
- **Name of the Innovation-** Photonic receiver with Compressed Sensing
- **Citation-** Photonic microwave receiver with a 1-20GHz RF coverage and 1GHz instantaneous bandwidth is developed. It includes compressive sensing and machine learning for efficient and high-speed signal processing. In the environment of rapidly emerging electronic threats, we are engineering photonics to enhance performance of modern EW systems so they can monitor wide electronic spectrum to detect, analyze, and mitigate new threats

Mr. Krishna Kumar



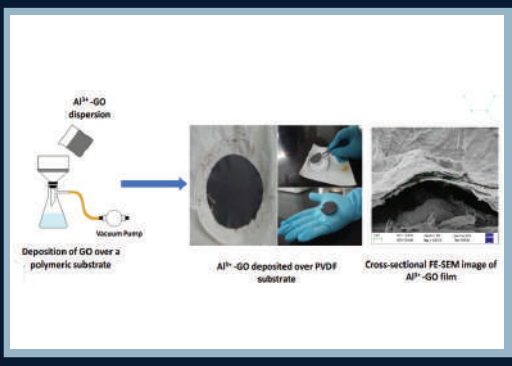
Lightmotif Automation Sensors and Systems Pvt Ltd

Prize: 2nd

Cash Reward: 8 Lakhs

- **Challenge Area-** Materials & Technologies for Fire Suppression/ Protection
- **Name of the Innovation-** Novel and Efficient Aluminium Crosslinked Graphene Oxide for Fire Protection in Defense Applications
- **Citation-** To solve the challenges of conventional fire-retardant materials and to reduce the fire-related casualties especially in the defence sector, Log9 has developed an efficient flame-retardant nanomaterial i.e., Aluminium-crosslinked Graphene Oxide, which resists combustion in ambient air by formation of char.

Mr. Akhsay Singhal



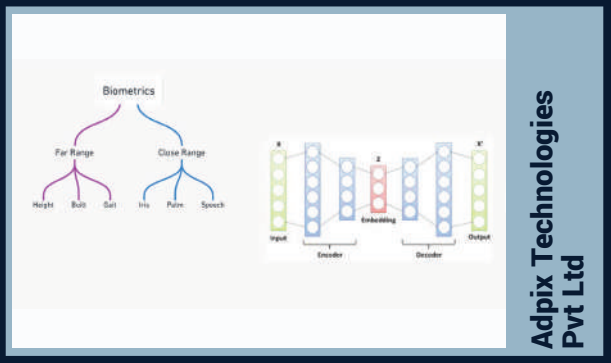
Log 9 Materials Scientific Pvt Ltd

Prize: 2nd

Cash Reward: 8 Lakhs

- **Challenge Area-** Artificial Intelligence based detection of a person based on physiological parameters.
- **Name of the Innovation-** Project Garuda
- **Citation-** The prototype analyses other physiological features like gait, height, built, Iris and ear lobe to recognize people in most public spaces. Garuda, which recognizes the identity of a person based on a two fold approach. First is robust object detection using the cues from the stream (captured by the CCTV) and pre analysis like Weapon detection, Mask detection and abnormal gait detection. Second approach is identification of the person based on the unique biometrics extracted from the indigenous database that will be collected by us.

Mr. Surya Teja Cheedella

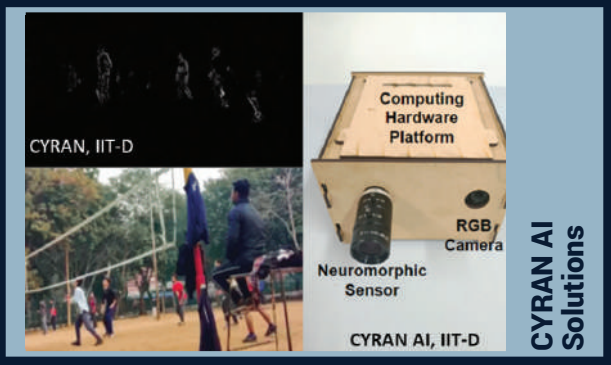


Prize: 2nd

Cash Reward: 8 Lakhs

- **Challenge Area-** Development of Neuromorphic Vision Sensors
- **Name of the Innovation-** CYRAN Comprehensive Neuromorphic Sensing & Processing Suite
- **Citation-** Energy efficient neuromorphic sensing and processing capabilities that are bio-inspired. It is hybrid (HW-SW) and has 2 main modules Neuromorphic Sensing & Processing. Offers complete end-to-end solution for evaluation, design and development of neuromorphic AI techniques in new use cases.

Mr. Manan Suri

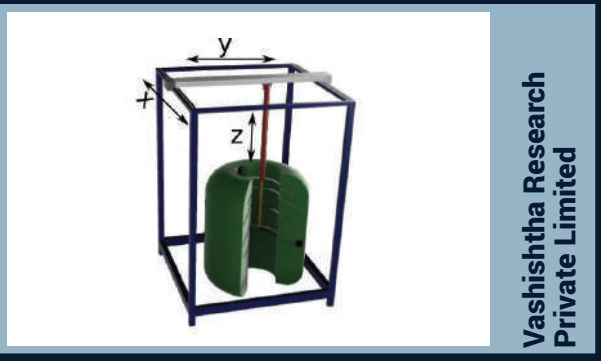


Prize: 2nd

Cash Reward: 8 Lakhs

- **Challenge Area-** Development of robotic arm for scooping /machining of cured solid propellant (Shore 'A' hardness>=70)
- **Name of the Innovation-** Propellant Machining Robot
- **Citation-** Robot used for machining conical slots in solid propellant. We present a 6-DOF robotic arm to machine conical slots into a propellant grain. The robot axes are X,Y,Z (Cartesian axes), θ and φ (Rotational axes) and a telescoping mechanism to go deep into the slot and scoop out the propellant. The cutting mechanism consists of two cutters, which pares away the propellant using a scooping action, and cuts away the ribbon formed into pieces, which are removed through vacuum suction through a tube, thus preventing sparking the propellant.

Mr. Saurabh Chaterjee

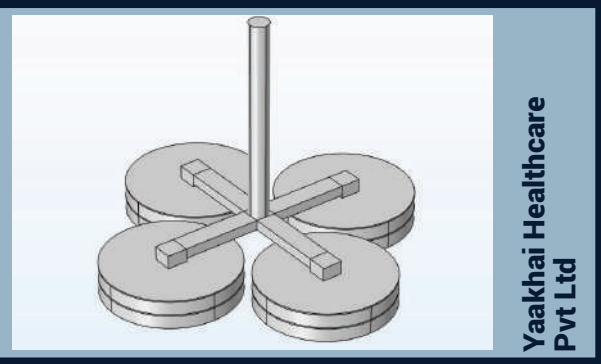


Prize: 2nd

Cash Reward: 8 Lakhs

- **Challenge Area-** Underwater MEMS Acoustic Vector Sensor
- **Name of the Innovation-** Piezoelectric MEMS Underwater Acoustic Vector Sensor
- **Citation-** The proposed idea is to enhance the sensitivity and performance of the underwater acoustic vector sensor at a low-frequency range. Our MEMS sensor possesses low power consumption with low cost with simple integration into the systems

Mr. Santosh AS



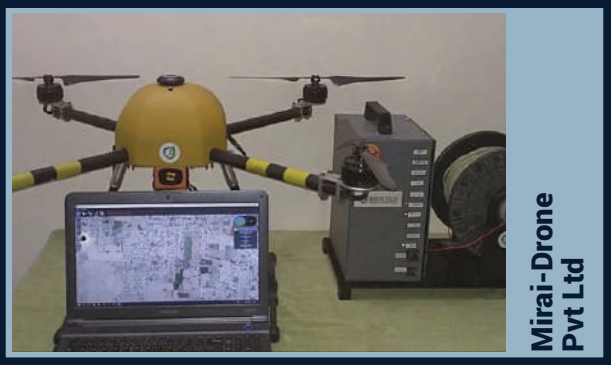
Prize: 2nd

Cash Reward: 8 Lakhs

Mirai-Drone
Industrial Drone Specialists

- **Challenge Area-** Low Power Tethered UAV
- **Name of the Innovation-** MD-T100
- **Citation-** MD-T100 is a Tethered Multirotor UAV system capable of Carrying 2 kgs of payload to 100m height and fly for 8-10 hours continuously. Our aim to make this system a useful tool for Border surveillance, Communication relay and Disaster relief work.

Mr. Ashutosh Kumar



Mirai-Drone Pvt Ltd

Prize: 2nd

Cash Reward: 8 Lakhs

ModeliCon INFOTECH

- **Challenge Area-** Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- **Name of the Innovation-** VIGnAN- A robust tool for Diagnostics and Prognostics of Aero Gas Turbines
- **Citation-** We have proposed a robust and novel engine lifing tool: VIGnAN (Versatile aIrcraft engine lifing using Generative Adversarial Networks). Complete engine failure history is sparse as regular preventive maintenance is undertaken before the final failure of any component or the engine. This makes the task of failure prediction a challenge even with data-based techniques. VIGnAN overcomes this crucial gap by employing a state-of-the art artificial intelligence technique called Generative Adversarial Networks (GAN).

Mr. Sunil Shah

ModeliCon InfoTech LLP

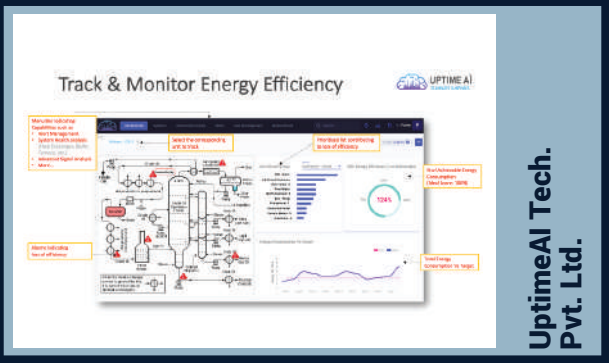
Prize: 3rd

Cash Reward: 6 Lakhs

UPTIME AI

- **Challenge Area-** Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- **Name of the Innovation-** "AI Expert"
- **Citation-** "AI based virtual expert" to increase manufacturing profits. UptimeAI operationalizes artificial intelligence ("AI") to the needs of asset operators to avoid surprises, failures, and reduce maintenance costs. "AI Expert" monitors sensor data and user feedback to maximize reliability, efficiency, and performance. By uniquely combining AI, 200+ years of domain knowledge, and self-learning workflows, "AI Expert" can monitor sensor data to adapt, predict problems, explain cause, and give prescriptive diagnosis. Benefits include 2x-5x reduction in false-alarms, manual effort, and time to act.

Mr. Jagadish Gattu



UptimeAI Tech. Pvt. Ltd.

Prize: 3rd

Cash Reward: 6 Lakhs

Xstats

- **Challenge Area-** Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- **Name of the Innovation-**HAWK- AI enabled Intelligent Warning System
- **Citation-** 'PredictiveMaintenance' using data analytics has become one of the important strategies in aero gas turbine today for maximization of Operational Efficiency of the asset.
  Chistats presents a comprehensive solution for a fault prediction engine for the aero gas turbine on near real-time basis that is based on the use of standard and stable open-source tools.These tools will specifically help to integrate with data streams from various sensors using Industrial Internet of Things (IIoT) to create a dependable and reliable Predictive Engine.

Mr. Rahul Lahane

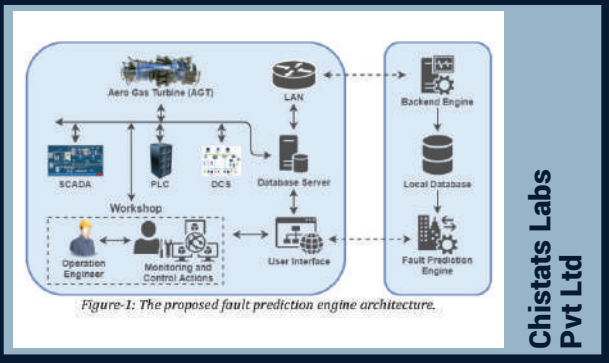


Figure-1: The proposed fault prediction engine architecture.

Chistats Labs Pvt Ltd

Prize: 3rd

Cash Reward: 6 Lakhs

- **Challenge Area-** Materials & Technologies for fire suppression/protection
- **Name of the Innovation-** Thermal Insulation & Fire Protecting Materials and Process of Their Development
- **Citation-** Tifi (fire-proof/fire retardant material) is available in fiber, gel and composite forms for fire-proofing accommodation, tents, ammunition storage, extreme weather personal clothing, furnishings and office furniture, fire suits and insulation for high performance engines

Mr. Premendra Singh

Prize: Certificate of Merit

- **Challenge Area-** Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- **Name of the Innovation-** AI ML system for Gas Turbine monitoring
- **Citation-** High fidelity AIML system based on signed digraphs method. The Gas Path (Thermodynamic) analysis method employs an engine model to process measured data in order to diagnose changes in the component performance that are generally linked to degradation, aging or failure. It establishes relationship between the parameters which can be expressed by a function, which is materialized by a computer model that can reproduce the value of any thermodynamic quantity measured along the gas path

Mr. Pradeep Thangappan

Prize: Certificate of Merit

- **Challenge Area-** Open Category: Exploring the Unthinkable and Unimaginable
- **Name of the Innovation-** CEREBO
- **Citation-** CEREBO®'s novel application of near-infrared spectroscopy makes it possible to detect intracranial hemorrhages non-invasively. The machine learning algorithm eliminates the need of manual calibration and expert data interpretation. This will impact more than 50 million people across the world.

Ms. Shilpa Malik

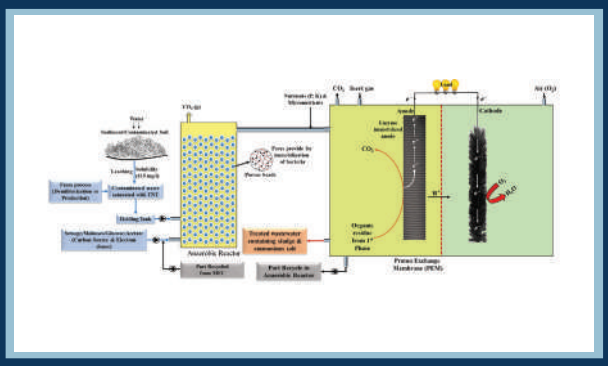
Bioscan Research

Prize: Certificate of Merit

Individual

Sudipta Sarkar

- **Challenge Area-** Eco-friendly Explosive Waste Management
- **Name of the Innovation:** Hybrid Anaerobic Reactor and Microbial Fuel Cell for Enhanced Biodegradation and Energy Harvesting from Wastewater containing TNT (HAnMFC)
- **Citation-** 2,4,6-trinitrotoluene (TNT)-bearing wastewater is difficult to degrade. We conceptualize a novel two-stage process consisting of an anaerobic process followed by a microbial fuel cell (MFC). Product water shall contain only nutrients like nitrogen, phosphorus while the MFC shall generate energy.

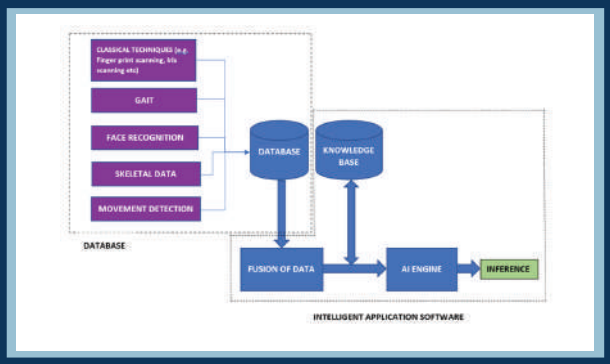


Prize: 1st

Cash Reward: 5 Lakhs

Dr. Shivani Verma

- **Challenge Area-** Artificial Intelligence based detection of a person based on Physiological parameters.
- **Name of the Innovation:** Design and development of an intelligent personal recognition system based on physiological parameters
- **Citation-** The proposed design would be an Intelligent person detection & Identification system, with high level of confidence and low false alarm rate, in all adversities such as occluded, obscured, low light condition, artificial distortion of movement/postures etc. The inspiration is to help the Armed and paramilitary forces for identification of anti-social elements and terrorists even in disguise or in dim light.

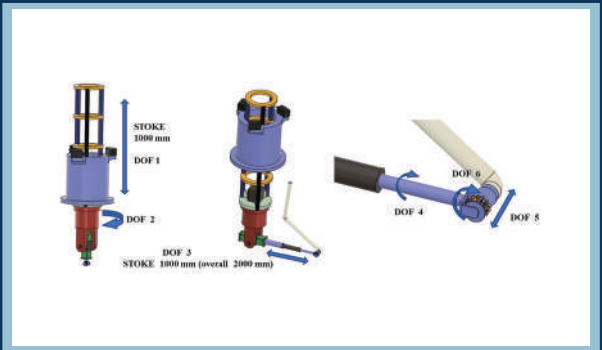


Prize: 1st

Cash Reward: 5 Lakhs

Dr. J. Jayaseelan

- **Challenge Area-** Development of robotic arm for scooping / machining of cured solid propellant (Shore 'A' hardness≥ 70)
- **Name of the Innovation:** Design of Robotic Propellant Machining System
- **Citation-** The technology development for machining intricate special profiles on cured solid propellant cast inside rocket motors is a challenging task for which ARI has expertise. This technology covers design, development and testing of Machining System integrated with Robotic telescopic arm to achieve 6 DOF. The Scooping cutter geometry and material, specially designed with vacuum chip removal ducting will ensure safe mac

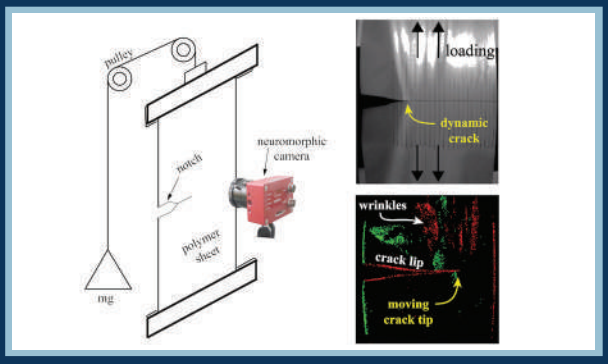


Prize: 1st

Cash Reward: 5 Lakhs

Poornakanta Handral

- **Challenge Area-** Development of Neuromorphic Vision Sensors
- **Name of the Innovation-** eCLOUD
- **Citation-** We develop a novel solution using bio-inspired neuromorphic cameras and smart algorithms in computational geometry. Our technology breaks the shackles of frame-based imaging in high-speed experimental mechanics.



Prize: 1st

Cash Reward: 5 Lakhs

Shirodkar

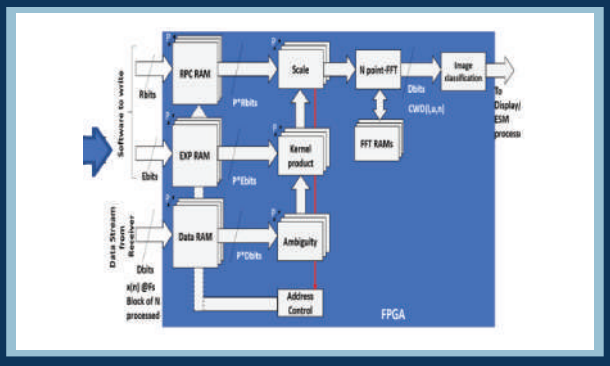
- **Challenge Area-** Low powered Tethered UAV
- **Name of the Innovation-** Tether Heavy Lift UAV Drone
- **Citation-** Normal UAV drone has limited flying time and low weight equipment carrying capacity. It is difficult to continuous surveillance without an interval. We have developed “Tether UAV drone” which gives full 24-hour surveillance in a day at 200-meter from ground. Instead of using large battery in drone, we have developed tether cable which supplies electric power from ground station to flying drone. It covers 8km diameter area for surveillance with HD day light & infrared night vision camera. It will use for security and surveillance, search and rescue operations

Prize: 1st

Cash Reward: 5 Lakhs

Venugopal Santhanam

- **Challenge Area-** Detection & classification of low probability of intercept radar signals for electronic support systems
- **Name of the Innovation-** Choi Williams Distribution Processor FPGA Implementation for analysis of LPI radars
- **Citation-** Detection of LPI radar signals needs algorithms of higher order performing Time – Frequency analysis. FPGA implementation of Choi-William's Distribution based Time-frequency processor provides faster processing capabilities, scalability to cater to higher bandwidth. Choi-Williams Distribution (CWD) based detection algorithm provides a parameterized control to select auto terms and suppress interfering terms. Its inspiration is self-reliant India & a superpower

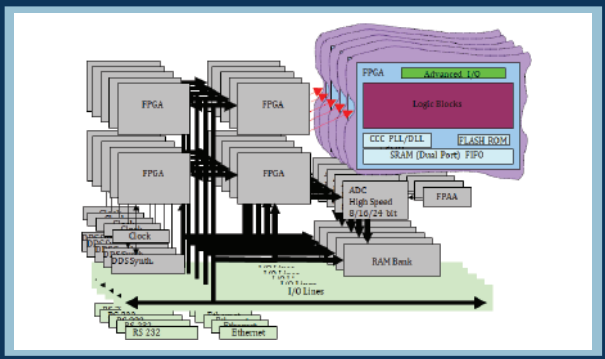


Prize: 2nd

Cash Reward: 4 Lakhs

James Bhaskaradas

- **Challenge Area-** Detection & Classification of Low Probability of Intercept Radar Signals for Electronic Support Systems
- **Name of the Innovation-** Intercept receiver for ES
- **Citation-** The proposed technology is a intercept receiver designed on a software defined radio platform with the capability to sweep a broad band of frequencies with ideal instantaneous bandwidth of around 500/1000 MHz.

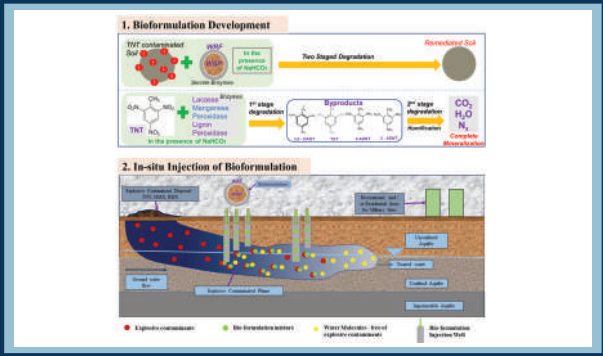


Prize: 2nd

Cash Reward: 4 Lakhs

Rahul Singh

- **Challenge Area-** Eco-friendly Explosive Waste Management
- **Name of the Innovation-** Bio-Degradation of Trinitrotoluene Contaminated Soil and Groundwater using White Rot-Fungi and Wheat Straw Powder
- **Citation-** Proposed an improved composition of bio-formulation comprising of White Rot-Fungi (WRF) and Wheat Straw Powder (WSP) in the presence of sodium bicarbonate, as a carrier, for the mineralization of TNT and other explosives from the contaminated soil and groundwater using in-situ looping injection technique.

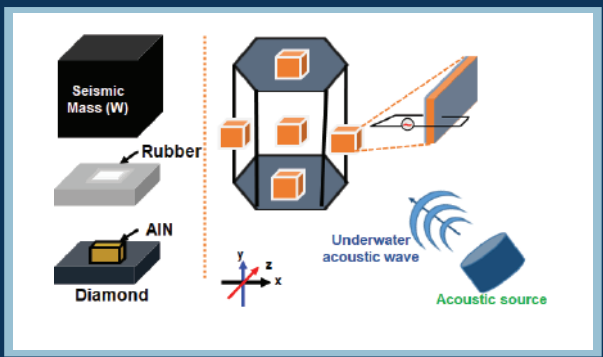


Prize: 2nd

Cash Reward: 4 Lakhs

Arunachalam N

- **Challenge Area-** Underwater MEMS Acoustic Vector Sensor
- **Name of the Innovation-** Diamond based MEMS acoustic vector sensor
- **Citation-** Our innovation is to provide a compressive-type piezoelectric accelerometer by utilizing the high acoustic velocity materials such as diamond (base) and AlN (piezoelectric) as axial vector sensor for sustained performance.

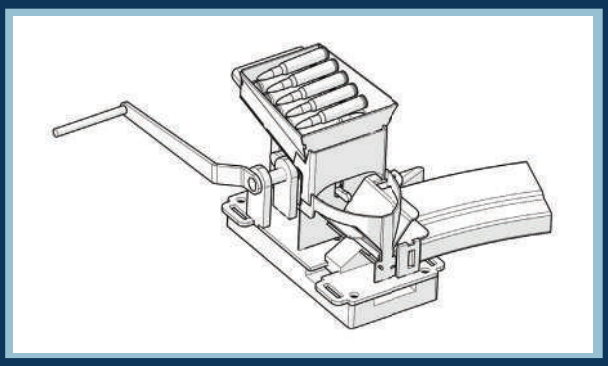


Prize: 2nd

Cash Reward: 4 Lakhs

Akshay Vivek Joshi

- **Challenge Area-** Open Category: Exploring unthinkable and unimaginable
- **Name of the Innovation-** Speed Loader for INSAS Magazines
- **Citation-** The present invention relates to a magazine loader to be used for loading the bullets into the magazine of small arms such as INSAS rifle with least possible time (20 rounds in 6sec) and human efforts and which can work normally under rough and varied conditions.

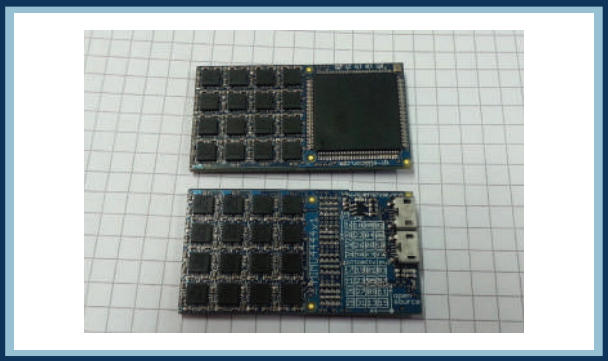


Prize: 2nd

Cash Reward: 4 Lakhs

Arjun Chauhan

- **Challenge Area-** Open Category: Exploring the Unthinkable and Unimaginable
- **Name of the Innovation-** Armed Personnel Tracking in GPS Denied Environment
- **Citation-** We have developed a device, called "IKHNAIE", based on wearable technology for Tri-Services and CAPF which can be integrated with pre-existing systems so as to track troops on the ground at all times, even in GPS-denied areas while sending data to the ground station.

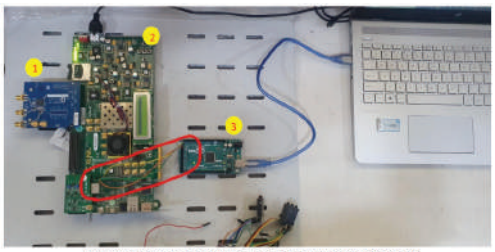


Prize: 2nd

Cash Reward: 4 Lakhs

V Sai Deepthi

- **Challenge Area-** Detection & Classification of Low Probability of Intercept Radar Signals for Electronic Support Systems
- **Name of the Innovation-** LPI Algorithms for FPGA based ELINT Sub-System
- **Citation-** Develop PRI De-Interleaving Algorithms to tackle LPI PRI patterns and attack the RF LPI waveforms. It is comprehensive and self-contained system handled in real-time



KINTEX-7 COTS Board Set-up with Arduino MEGA2560 Board

Prize: 3rd

Cash Reward: 3 Lakhs

Pravin N

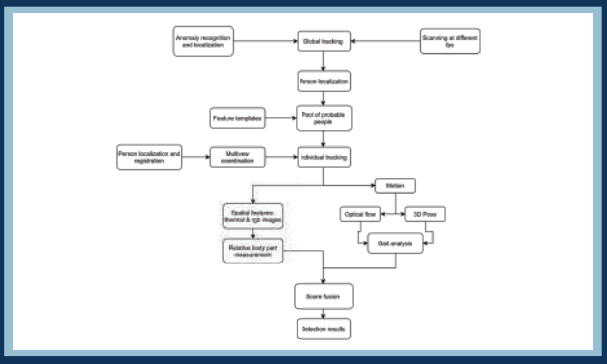
- **Challenge Area-** Materials & Technologies for Fire Suppression/ Protection
- **Name of the Innovation-** Flame retardant nanoparticles coated Natural fibre Reinforced Biobased epoxy resin composite
- **Citation-** Developed a Flame retardant Composite by using Natural resources. For flame retardant property, coated nanoparticles obtained from natural resources, thus making the flame retardant composite bio compatible and biodegradable

Prize: 3rd

Cash Reward: 3 Lakhs

Himanshu Buckchash

- **Challenge Area-** Artificial Intelligence based detection of a person based on physiological parameters
- **Name of the Innovation-** mPLIT - Multiveiw Person Localization, Identificationand Tracking
- **Citation-** The proposed technology provides prognostics tools for predicting health conditions of aero-engines. The prognostics technique utilizes vibration signal processing and machine learning techniques for constructing health indicators to track engine faults and calculating their remaining useful life.

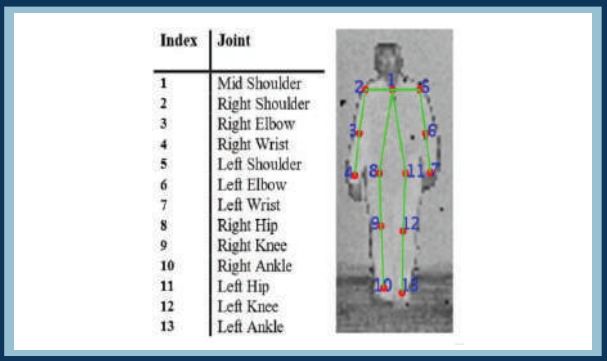


Prize: 3rd

Cash Reward: 3 Lakhs

Prasenjit Ghose

- **Challenge Area-** Artificial Intelligence based detection of a person based on physiological parameters
- **Name of the Innovation-** HIMAT - Human Identification Model Artificially Trained
- **Citation-** Our country faces many disturbances, both in the form of external aggression like war and terrorist attacks. Such attacks pose serious threats to our national security. It becomes a gruelling task to identify the infiltrators and offenders like sleeper cells and smugglers disguised as someone else.



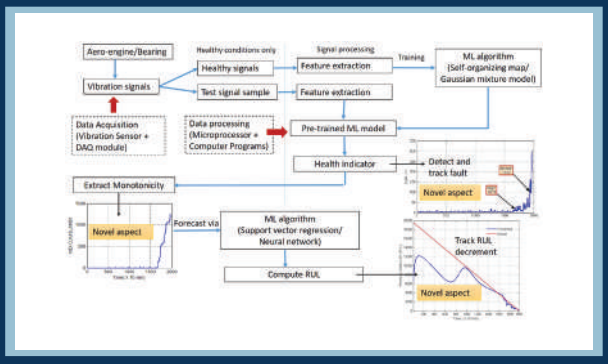
Index	Joint
1	Mid Shoulder
2	Right Shoulder
3	Right Elbow
4	Right Wrist
5	Left Shoulder
6	Left Elbow
7	Left Wrist
8	Right Hip
9	Right Knee
10	Right Ankle
11	Left Hip
12	Left Knee
13	Left Ankle

Prize: 3rd

Cash Reward: 3 Lakhs

Akhand Rai

- **Challenge Area-** Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- **Name of the Innovation-** Performance degradation assessment and Remaining Useful Life Prediction for Prognostics of Aero-engine Bearings.
- **Citation-** The proposed technology provides prognostics tools for predicting health conditions of aero-engines. The prognostics technique utilizes vibration signal processing and machine learning techniques for constructing health indicators to track engine faults and calculating their remaining useful life.

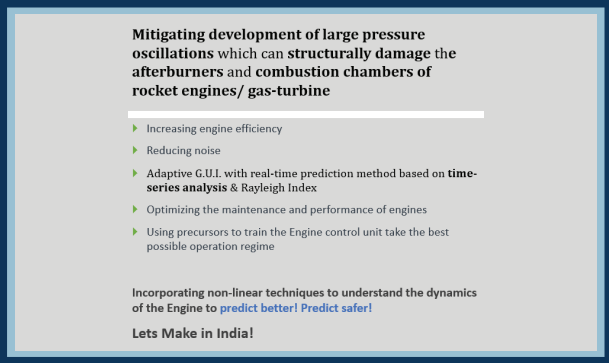


Prize: 3rd

Cash Reward: 3 Lakhs

Gurpreet Singh

- **Challenge Area-** Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- **Name of the Innovation-** Engine control modules for gas-turbines for testing and optimization
- **Citation-** One of the biggest challenges in running a successful gas turbine is to mitigate combustion instabilities while ensuring optimum performance throughout lean combustion. The developed engine control module can mitigate high amplitude pressure oscillations by offering real-time prediction methods based on the development of statio- wise stability index to monitor the dynamics of the aero-engine



Prize: 3rd

Cash Reward: 3 Lakhs

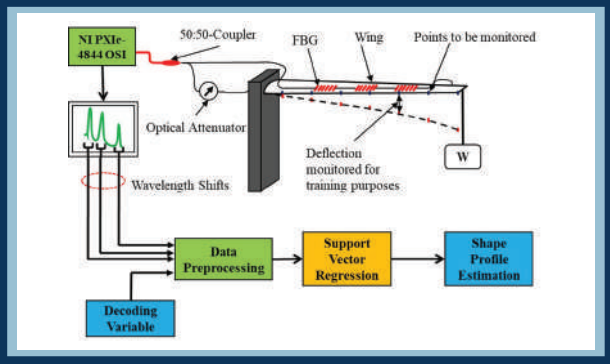
Anirban Roy

- **Challenge Area-** Materials and Technologies for Fire Suppression/Protection
- **Name of the Innovation-** An automatic and environment-friendly aerosol-based fire suppression system for use in defence establishments
- **Citation-** A smart and environment-friendly aerosol- based fire detection and suppression system has been developed. The outbreak of fire is sensed by monitoring the temperature of a given space usinga temperature sensor. When temperature crosses a predefined threshold, an electronic circuit activates an alarm and aerosol-based fire suppressant is released from a metallic canister, leading to extinguishment of the fire.

Prize: Certificate of Merit

Mainak Basu

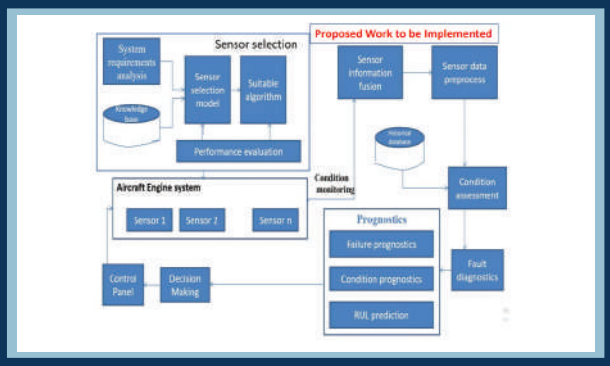
- **Challenge Area-** Distributed Fiber Optic Sensor Interrogator
- **Name of the Innovation-** AI assisted Passive Distributed Fiber Optic Sensor Interrogator
- **Citation-** The technology enables a cost effective yet logistically viable distributed fiber optic sensor interrogator that is assisted via an Artificial Intelligence. The system has use in high cost and high maintenance platforms like aircrafts and ships to extend their operational lifespan and reduce maintenance cost



Prize: Certificate of Merit

Dr. Sirisha Daggubati

- **Challenge Area-** Data Driven Health Monitoring and Early Warning Diagnostic Tools for Aero Gas Turbine Engines
- **Name of the Innovation-** A Noise Invariant Multivariate Time series Classification for Aircraft Gas Turbine Engine Health Monitoring
- **Citation-** The aim of project is to design an intelligent health monitoring system for aircraft gas turbine engine using supervised machine learning approach. Monitoring health of engine is formulated as a real time multi variate time series classification problem, and a supervised learning model is built using historical flight data and simulated data



Prize: Certificate of Merit

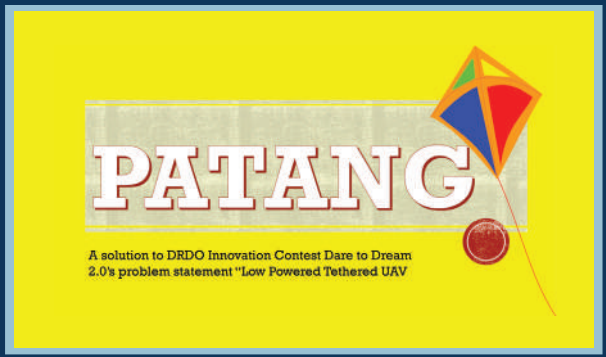
Pitambar Panda

- **Challenge Area-** Open category: exploring the unthinkable and unimaginable
- **Technology Name-** EXNOS WIND TURBINE
- **Citation-** EXNOS Is the most efficient design of vertical axis wind. We have Developed a unique design of blade by integrating highly optimizes pattern to reduce the negative force on the rear side blade of conventional Vertical axis Wind Turbine and increased Overall Efficiency of the turbine by 22.3%.

Prize: Certificate of Merit

Himanshu Rai Sharma

- **Challenge Area-** Low powered tethered UAV
- **Name of the Innovation-** PATANG
- **Citation-** PATANG is a kite-shaped Tethered UAV. It is a concept design inspired by the Boeing CH-47 Chinook helicopter with a levelled rotor placement inspired from 3-D Chess. PATANG's purpose is to provide aid in surveillance of government buildings and border area



Prize: Certificate of Merit

Acknowledgement

Dare to Dream Innovation Contest 2.0 was conducted under the aegis of DRDO by DTDF. This mammoth task would not have been completed seamlessly without the whole-hearted support and guidance from Dr. G Satheesh Reddy, Secretary DDR&D & Chairman DRDO, Mr. Subir Mallick, Addl FA (R&D) & AS and Director General(TM). The entire DRDO community has contributed invaluably towards ensuring the success of the contest, notably DESIDOC and the Cluster DGs, whose prolonged support fructified itself in the form of the event being a huge success.

Other than the DRDO family, distinguished members of the Independent Expert Committee headed by Dr S. S. Sundaram in the capacity of its Chairman, supported by the team TDF at Invest India and AGNIi (Special mention Ms. Aprajita Saini), which is executed by Invest India(India's National Investment Promotion Agency) have worked relentlessly and tirelessly to evaluate all the project submissions that were received as part of this edition.

The DRDO family appreciates their efforts towards the execution of this competition. Without the constant support and assistance of all the stakeholders, Dare to Dream 2.0 contest would not have scaled the heights that it did, and they have all played their roles in unearthing true innovative potential present in the country.

सत्यमेव जयते

रक्षा मंत्रालय
MINISTRY OF
DEFENCE

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रक्षा मंत्रालय
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