

Enabling Rural Communities with Technology

TiHAN @IITH



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IITH has good rural development initiatives that include R&D, skill development, and entrepreneurship activities. DST, MEITY, DRDO, and industries fund various research and development projects. Under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS), the Department of Science and Technology (DST) has sanctioned the prestigious Technology Innovation Hub at IITH in the technological verticals of autonomous navigation and data acquisition systems. Entering its fourth year, TiHAN has become part of many projects and development activities that contribute well to rural development and, hence, to the development of our country.

TiHAN and IITH, in collaboration with various industries and academic institutions, have conducted multiple hackathons, skill development workshops, and collaborative projects as below.

1. ANTRA (Autonomous Navigation for Transformation of Rural Areas)

IRMA-ISEED Foundation is a technology business incubator supporting and nurturing early-stage rural, social, and collective enterprises. ISEED encourages individuals and institutions to experiment with empathy, helping them innovate new products, services, and institutions that impact livelihoods. They work with our Social Enterprise Partners (SEP) and Ecosystem Partners (EP) to co-create a dynamic and vibrant social entrepreneurial ecosystem and focus on the objective of supporting and nurturing the FPOs and social enterprises through capacity building, research, and a strong focus on enabling sustainable transformation.

Due to the uniqueness of the foundation, TiHAN-IITH has



Address during the ANTRA Hackathon by Mr Girish, Hub Executive Officer, TiHAN-IITH

collaborated with the IRMA-ISEED foundation and conducted this hackathon.

The top five winners out of the twenty final participants were as follows:

Name of the Participant	Organization
Raiat Nikhade	Viroha Food Pvt Ltd.
Shruti Mehta	Bharat Godam
Vishal Singhal	Temperate Tech
Ajith Kumar	Sand Bird
RLVN Sai Gnana Sagar	Agri AI



One of the Startups sponsored by TiHAN-IITH during the ANTRA Hackathon

2. Skill Development Workshops

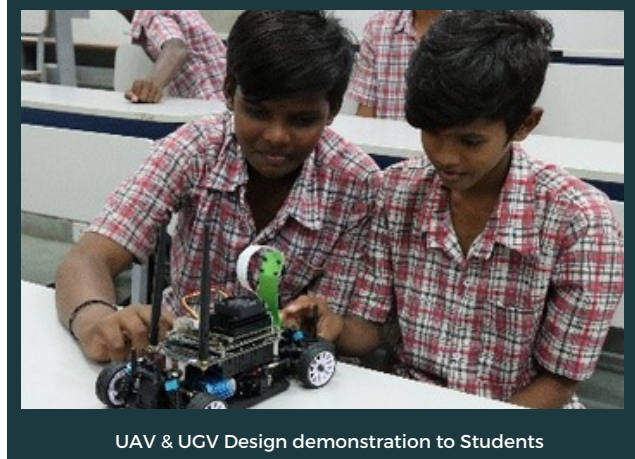
A skill development program called "SKILLS ON WHEELS" was initiated by TiHAN, in which the kits were taken to various schools and colleges near IITH. This program intends to provide an opportunity to learn the basics of technology in the Unmanned Aerial and Ground Vehicles domains.



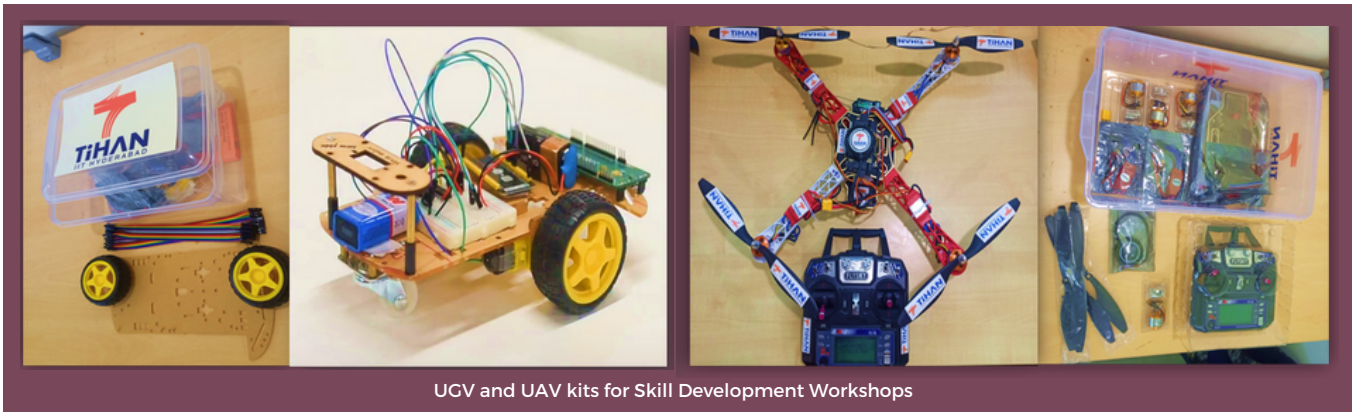
Skill Development Workshop at ZPHS, Sangareddy



SKILLS ON WHEELS program by TiHAN-IITH



UAV & UGV Design demonstration to Students



UGV and UAV kits for Skill Development Workshops

TiHAN-IITH has developed easy learning kits which are utilized to conduct skill development classes at various avenues. These kits consist of a quadcopters and

ground vehicles basic structures, Raspberry Pi board, required basic sensors, Brushless DC motors and other necessary controllers.

Skill development workshops were conducted using these kits, which impacted the students and attracted them to learn such advanced technology.

3. Leveraging the UAV-based technology for crop residue: Important resource for crop-livestock farming community: This ongoing project by TiHAN, IITH in collaboration with International Crops Research Institute for Semi Arid Tropics (ICRISAT), Hyderabad is with an objective of UAV-enabled assessment of crop residue. Using UAVs, the quantity of dry biomass is estimated as a factor of height of the plant and the canopy cover. This also aims at estimating the nitrogen content and digestibility factor of the crop residue.



UAV Surveying to estimate canopy cover



Concept Explanation on field by TiHAN-IITH and ICRISAT

4. Advanced Aerial mapping (AAM) Rider:

This is another ongoing project by TiHAN and IITH in collaboration with IIIT Sricity with an objective of Data collection and database creation for structured or unstructured mango farms.

This project also aims at automating the monitoring process and estimation of yield in the mango farms. This project gives an estimated yield of produce without the need of plucking the produce from the field.

Once the produce reaches its full yield time as determined by the estimator, the produce can be sent to market for improved revenue.



AI Estimator for Mango yield

Rural Development Centre

Rural Development Centre (RDC) at IITH was established in July 2020 with a vision to support rural development initiatives of the Government through innovative technologies being developed at IITH.

The main objectives of RDC are as follows:

- To identify the problems and needs of the rural people through direct interaction or with the help of reputed institutions/ organizations/ NGOs working for rural sectors.
- To strengthen the UBA activities conducted in the villages adopted by IITH.
- To help the NNS team to conduct activities in nearby villages.
- To facilitate the faculty/staff/students who are passionate to develop technologies to be used in the field such as agriculture, sanitation, drinking water, etc. in rural areas.
- To collaborate with institutions/industries interested to contribute meaningfully for the development of the rural sector.
- To organize training/workshops on skills development to educate the villagers.
- To spread awareness among rural people about the importance of hygiene and cleanliness.
- To develop an academic framework for working on societal problems, their solution, and delivery.
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