

December 3 2018

Final Year Project at “INDIAN SPACE RESEARCH ORGANISATION”

The department of Computer Science and Engineering took immense effort to take the students to “**Indian Space Research Organization**” to do their final year curriculum project in order to provide them an opportunity to understand practical aspects of the theoretical knowledge gained in the class rooms. Four of our final year Computer Science and Engineering students **Mr.N.Mohammed Waseem Ebrahim, Mr.M.Sriram, Mr.T.R.Sudharsan and Mr.M.Surendar** have completed their project titled “ **Student Geographical Information System**” during the period January 2018 to March 2018 at “ National Remote Sensing Centre, Hyderabad”. Our Appreciation and Best wishes to all the team members.



भारत सरकार
अर्जाव विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बंगलूर, हैदराबाद -500 037, तेलंगणा, भारत
दूरभाष : +040-23879572-76
दूरिच्छा : +040-23879261-65
फैक्स : +040-23878648

Government of India
Department of Space
National Remote Sensing Centre
Bangalore, Hyderabad - 500 037, Telangana, India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Certi/Mar/01/32

प्रमाणपत्र CERTIFICATE

यह प्रमाणित किया जाता है कि सुदर्शन जो पेरी आईटी, चेन्नई के बी. टेक के विद्यार्थी है, ने आउटरीच प्रतिभा दिन- मार्च 2018 पर एक तकनीकी पत्र प्रस्तुत किया, जो 15 मार्च, 2018 को राष्ट्रीय सुदूर संवेदन केन्द्र में मनाया गया था।

This is to certify that **Sudharsan** student of B.Tech of PERI IT, Chennai has presented a paper titled "Students Geographical Information System" During Outreach Talent Day - March, 2018 celebrated at National Remote Sensing centre, ISRO, Hyderabad on 15th of March, 2018.

Dr. Rajashree V Bothale
GM, Outreach Facility
NRSC, Hyderabad

श्री V राघव Venkataraman
DD, ASDM & OA
NRSC, Hyderabad

Indian Space Research Organisation

भारत सरकार
अर्जाव विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बंगलूर, हैदराबाद -500 037, तेलंगणा, भारत
दूरभाष : +040-23879572-76
दूरिच्छा : +040-23879261-65
फैक्स : +040-23878648

Government of India
Department of Space
National Remote Sensing Centre
Bangalore, Hyderabad - 500 037, Telangana, India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Certi/Mar/01/31

प्रमाणपत्र CERTIFICATE

यह प्रमाणित किया जाता है कि एम सुरेंद्र जो पेरी आईटी, चेन्नई के बी. टेक के विद्यार्थी है, ने आउटरीच प्रतिभा दिन- मार्च 2018 पर एक तकनीकी पत्र प्रस्तुत किया, जो 15 मार्च, 2018 को राष्ट्रीय सुदूर संवेदन केन्द्र में मनाया गया था।

This is to certify that **M Surender** student of B.Tech of PERI IT, Chennai has presented a paper titled "Students Geographical Information System" During Outreach Talent Day - March, 2018 celebrated at National Remote Sensing centre, ISRO, Hyderabad on 15th of March, 2018.

Dr. Rajashree V Bothale
GM, Outreach Facility
NRSC, Hyderabad

श्री V राघव Venkataraman
DD, ASDM & OA
NRSC, Hyderabad

Indian Space Research Organisation

भारत सरकार
अर्जाव विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बंगलूर, हैदराबाद -500 037, तेलंगणा, भारत
दूरभाष : +040-23879572-76
दूरिच्छा : +040-23879261-65
फैक्स : +040-23878648

Government of India
Department of Space
National Remote Sensing Centre
Bangalore, Hyderabad - 500 037, Telangana, India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Certi/Mar/01/29

प्रमाणपत्र CERTIFICATE

यह प्रमाणित किया जाता है कि एम. वसीम जो पेरी आईटी, चेन्नई के बी. टेक के विद्यार्थी है, ने आउटरीच प्रतिभा दिन- मार्च 2018 पर एक तकनीकी पत्र प्रस्तुत किया, जो 15 मार्च, 2018 को राष्ट्रीय सुदूर संवेदन केन्द्र में मनाया गया था।

This is to certify that **Md. Waseem** student of B.Tech of PERI IT, Chennai has presented a paper titled "Students Geographical Information System" During Outreach Talent Day - March, 2018 celebrated at National Remote Sensing centre, ISRO, Hyderabad on 15th of March, 2018.

Dr. Rajashree V Bothale
GM, Outreach Facility
NRSC, Hyderabad

श्री V राघव Venkataraman
DD, ASDM & OA
NRSC, Hyderabad

Indian Space Research Organisation

भारत सरकार
अर्जाव विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बंगलूर, हैदराबाद -500 037, तेलंगणा, भारत
दूरभाष : +040-23879572-76
दूरिच्छा : +040-23879261-65
फैक्स : +040-23878648

Government of India
Department of Space
National Remote Sensing Centre
Bangalore, Hyderabad - 500 037, Telangana, India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Certi/Mar/01/30

प्रमाणपत्र CERTIFICATE

यह प्रमाणित किया जाता है कि एम श्रीराम जो पेरी आईटी, चेन्नई के बी. टेक के विद्यार्थी है, ने आउटरीच प्रतिभा दिन- मार्च 2018 पर एक तकनीकी पत्र प्रस्तुत किया, जो 15 मार्च, 2018 को राष्ट्रीय सुदूर संवेदन केन्द्र में मनाया गया था।

This is to certify that **M Sriram** student of B.Tech of PERI IT, Chennai has presented a paper titled "Students Geographical Information System" During Outreach Talent Day - March, 2018 celebrated at National Remote Sensing centre, ISRO, Hyderabad on 15th of March, 2018.

Dr. Rajashree V Bothale
GM, Outreach Facility
NRSC, Hyderabad

श्री V राघव Venkataraman
DD, ASDM & OA
NRSC, Hyderabad

Indian Space Research Organisation

Principles of Remote Sensing & Applications

nrs

PRINCIPLES OF REMOTE SENSING

Remote Sensing is the Science of detecting and measuring the physical and chemical properties of the Earth's surface from a distance using sensors on satellites or aircraft.

Types of Remote Sensing:

- Active Remote Sensing:** Uses its own source of energy to illuminate the target and measure the reflected energy.
- Passive Remote Sensing:** Measures the natural energy emitted or reflected by the target.

RESOLUTION

Resolution refers to the ability of a sensor to distinguish between two objects. It is categorized into:

- Spatial Resolution:** The size of the smallest object that can be distinguished.
- Spectral Resolution:** The ability to distinguish between different wavelengths of light.
- Temporal Resolution:** The frequency with which a sensor can observe a given area.
- Radiometric Resolution:** The ability to measure the intensity of the reflected or emitted energy.

TYPES OF SENSORS

Sensors are devices that detect and measure the energy reflected or emitted by the target. They are classified into:

- Thermal Sensors:** Measure the temperature of the target.
- Optical Sensors:** Measure the visible and near-infrared light reflected by the target.
- Radar Sensors:** Use radio waves to measure the distance and direction of the target.
- Laser Sensors:** Use laser light to measure the distance and direction of the target.

Classification of Remote Sensing Satellites

Remote sensing satellites are classified based on their orbit and the type of sensors they carry. The main types are:

- Low Earth Orbit (LEO) Satellites:** Orbit at altitudes between 500 and 2000 km. They provide high-resolution data.
- Medium Earth Orbit (MEO) Satellites:** Orbit at altitudes between 2000 and 35000 km. They provide global coverage.
- Geostationary Earth Orbit (GEO) Satellites:** Orbit at an altitude of approximately 35000 km. They provide continuous coverage of a specific area.

Remote Sensing Applications

Remote sensing is used in a wide range of applications, including:

- AGRICULTURE & CROPS
- FOREST & BIO RESOURCES
- WATER RESOURCES
- GEOLOGY
- OCEANOGRAPHY
- DISASTER MANAGEMENT
- ENVIRONMENT
- RURAL DEVELOPMENT
- URBAN MANAGEMENT
- TOPOGRAPHY/MAPPING
- CLIMATE MODELLING
- GLOBAL CHANGE

A Glimpse of ISRO's Satellites

INDIAN LAUNCH VEHICLES

- India developed two experimental satellite launch vehicles, SLV-3 and ASLV
- Polar Satellite Launch Vehicle (PSLV), commissioned in 1997, has emerged as the workhorse launch vehicle of India with 39 consecutively successful launches by June 2017
- GSLV-Mk II with indigenously developed flight proven Cryogenic Upper Stage has four consecutive successes during 2014-2017 period
- GSLV-Mk III had its first successful orbital flight on June 05, 2017.

SLV-3
Satellite Launch Vehicle-3

ASLV
Augmented Satellite Launch Vehicle

PSLV
Polar Satellite Launch Vehicle

GSLV-Mk II
Geosynchronous Satellite Launch Vehicle-Mark II

GSLV-Mk III
Geosynchronous Satellite Launch Vehicle-Mark III

ISRO