**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

JNANASANGAMA, BELAGAVI – 590 018



**INTERNSHIP REPORT**

**ON**

**“PYTHON GUI FOR HARTLEY HUGGINS SENSOR”**

*Submitted in partial fulfillment of the requirements for the award of the degree*

**BACHELOR OF ENGINEERING**

in

**ELECTRONICS & COMMUNICATION ENGINEERING**

*Submitted by:*

**SAM PS**

**1MV18EC086**

*Internship carried out at*

LEOS, ISRO

BENGALURU - 560058

External Guide:

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY**

BENGALURU-562157

**2021-2022**

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY**

BENGALURU-562157

(Affiliated to Visvesvaraya Technological University, Belgaum, Karnataka)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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**CERTIFICATE**

This is to certify that **SAM PS(1MV18EC086),** a bonafide student of **SIR M. Visvesvaraya Institute of Technology, Bengaluru** has satisfactorily completed Industrial training from **LEOS,ISRO** in partial fulfilment of the requirements as prescribed by the **VTU** for the award of **Bachelor of Engineering** in **Electronics and Communication Engineering** and submitted this report during the academic year **2021 – 2022**.

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Signature of the Guide Signature of HOD Signature of Principal

**Name. Dr. R. Sundaraguru** **Dr. V. R. Manjunath**

Designation Professor & Head Principal

Dept of ECE Dept of ECE Sir MVIT, Bengaluru

**External Viva**

Name of the Examiners Signature with Date

1. **…………………………………………… ………………………………………….**
2. **…………………………………………… ………………………………………….**

**CERTIFICATE FROM INSTITUTION**

**REQUEST LETTER FROM THE INSTITUTION**

**DECLARATION**

I **SAM PS,** student of VII semester **Bachelor of Engineering,** Department of Electronics and Communication Engineering, **Sir** **M. Visvesvaraya Institute of Technology**, Bengaluru embodies report of my internship work carried out by me under the guidance of **Prof. XXXX, Designation, Sir M. Visvesvaraya Institute of Technology, Bengaluru** as partial fulfilment of requirement for the award of Bachelor of Engineering in Electronics & Communication by **Visvesvaraya Technological University, Belagavi** during the academic year 2021-2022.

Place: Bengaluru SAM PS

Date: 1MV18EC086

**ACKNOWLEDGEMENT**

The satisfaction and euphoria that accompany the completion of any task would be incomplete without the mention of the people who made it possible, whose constant guidance and encouragement ground my efforts with success.

I consider it is a privilege to express my gratitude and respect to all those who guided me in completion of Internship.

It’s a great privilege to place on record my deep sense of gratitude to the Management and **Dr.** V. R. Manjunath, principal, M. Visvesvaraya Institute of Technology who patronized throughout our career & for the facilities provided to carry out this work successfully.

It’s a great privilege to place on record my deep sense of gratitude toDr.R. Sundaraguru, Professor and Head, Dept. of Electronics and Communication Engineering, M. Visvesvaraya Institute of Technology who patronized throughout our career & for the facilities provided to carry out this work successfully.

I am grateful to my guide Prof. XXXX, Designation, Department of ECE, M. Visvesvaraya Institute of Technology and my external guide Dr. Sumesh, LEOS, ISRO.

I thank to the teaching and non-teaching staff members who have helped me directly or indirectly during the Internship.

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**SAM PS**

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**CHAPTER I**

**INTRODUCTION AND INDUSTRY PROFILE**

* 1. **INDIAN SPACE RESEARCH ORGANISATION – ISRO**

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Fig1.1: ISRO logo

India decided to go to space when Indian National Committee for Space Research (INCOSPAR) was set up by the Government of India in 1962. With the visionary Dr Vikram Sarabhai at its helm, INCOSPAR set up the Thumba Equatorial Rocket Launching Station (TERLS) in Thiruvananthapuram for upper atmospheric research.

Indian space research Organization, formed in 1968, superseded the erstwhile INCOSPAR. Vikram Sarabhai, having identified the rile and the importance of space technology in a Nation’s development, provided ISRO the necessary direction to function as an agent of development. ISRO then embarked on its mission to provide the Nation space-based services and to develop the technologies to achieve the same independently.

Throughout the years, ISRO has upheld its mission of bringing space to the service of the common man, to the service of the Nation. In the process, it has become one of the six largest space agencies in the world. ISRO maintains one of the largest fleets of communication satellites (INSAT) and remote sensing (IRS) satellites, that cater to the ever-growing demand for fast and reliable communication and earth observation respectively. ISRO develops and delivers application specific satellite products and tools to the Nation: broadcasts, communications, weather forecasts, disaster management tools, Geographic Information Systems, cartography, navigation, telemedicine, dedicated distance education satellites being some of them.

To achieve complete self-reliance in terms of these applications, it was essential to develop cost efficient and reliable launch systems, which took shape in the form of the Polar Satellite Launch Vehicle (PSLV). The famed PSLV went on to become a favored carrier for satellites of various countries due to its reliability and cost efficiency, promoting unprecedented international collaboration. The Geosynchronous Satellite Launch Vehicle (GSLV) was developed keeping in mind the heavier and more demanding Geosynchronous communication satellites.

Apart from technological capability, ISRO has also contributed to science and science education in the country. Various dedicated research centers and autonomous institutions for remote sensing, astronomy and astrophysics, atmospheric sciences and space sciences in general function under the aegis of Department of Space. ISRO's own Lunar and interplanetary missions along with other scientific projects encourage and promote science education, apart from providing valuable data to the scientific community which in turn enriches science.

Future readiness is the key to maintaining an edge in technology and ISRO endeavors to optimize and enhance its technologies as the needs and ambitions of the country evolve. Thus, ISRO is moving forward with the development of heavy lift launchers, human spaceflight projects, reusable launch vehicles, semi-cryogenic engines, single and two stage to orbit (SSTO and TSTO) vehicles, development and use of composite materials for space applications etc.

* 1. **LABORATORY OF OPTICS AND ELECTRONIC SENSORS – LEOS**

**** Fig 1.2: LEOS, ISRO at Peenya

Laboratory for Electro-Optics Systems (LEOS) is situated at Peenya Industrial Estate, Bengaluru where first India satellite was fabricated in 1975.

LEOS, one of the vital units of ISRO, deals with the design, development and production of Attitude Sensors for all LEO, GEO and interplanetary mission; develops and delivers Optical Systems for remote sensing and meteorological payloads. It is equipped with world class fabrication, testing and coating facilities. Next generation technologies such as 3-axis Fiber Optics Gyro, Optical Communication, MEMS, Nanotechnology, Detectors and Development of Science Payloads for future space missions are also bring pursued.

**CHAPTER II**

**THE INTERSHIP PROJECT**