ICTELLER

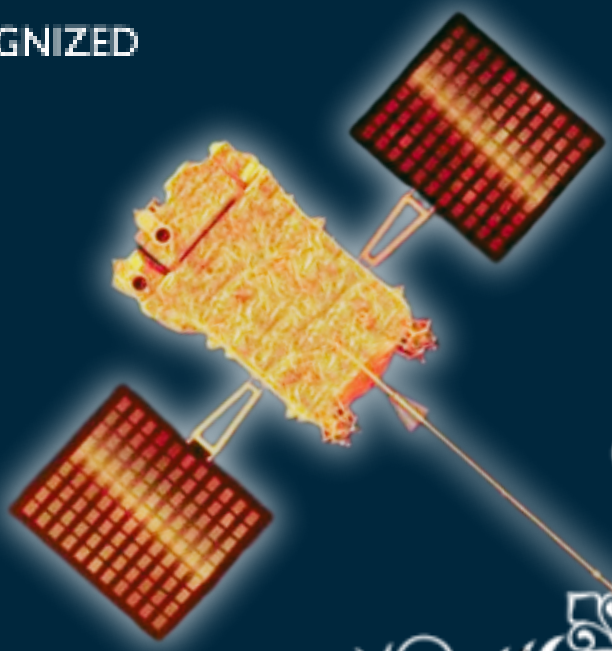
FEB'24 EDITION

SCHOOL OF TECHNOLOGY

DEPARTMENT OF
INFORMATION & COMMUNICATION TECHNOLOGY

PANDIT DEENDAYAL ENERGY UNIVERSITY

UGC RECOGNIZED



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ICT -2020

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ICT -2021

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ICT -2021

EDITORS' DESK

Greetings, Tech Enthusiasts!

Welcome to the 7th Edition of the ICTELLER, where we dive deep into the buzzing world of technology. Let's delve into the exciting updates and achievements of our esteemed faculty and brilliant students.

Our ICT department has been a hub of activity this time, spearheading remarkable initiatives that push the boundaries of technological possibilities.

Faculty members deserve applause for their outstanding contributions. Equally impressive are the accomplishments of our remarkable students.

Stay tuned for more updates, thought-provoking articles, and inspiring stories in our upcoming editions. The future is here, and we're here to guide you through it.

Happy reading!

VISION

Build a teaching and research ecology which is responsive to futuristic challenges.

&

MISSION

Strive and sustain intrinsically motivated learning and research environment focusing on real-world applications.

Provide quality undergraduate and graduate education to create Engineers of the future.

Develop intra-university, inter-university, industry, and societal collaborations.

MESSAGE FROM HEAD OF DEPARTMENT, ICT

It gives me immense pleasure to share the Newsletter of the Information and Communication Technology Department, ICTELLER for the month of February 2024. ICT Department is the most happening Department of the School of Technology with the application in the field of Artificial Intelligence, Machine learning, Machine Vision, RF Engineering, Digital Signal Processing, VLSI, Embedded Systems and Communication. Newsletter gives an overview of the activities carried out by students, staff and faculties during the month.

Newsletter gives an overview of the activities carried out by students, staff and faculties during the month. You may please share your feedback, comments & suggestions to the coordinators.

DEPARTMENTAL ACTIVITIES

Vritika - 2024

VRITIKA

"Development of AI/ML Techniques for Biometrics and its Applications: A comprehensive internship"

+

"Development of AI/ML Techniques for Biomedical Image and Signal Analysis: A comprehensive internship"

Fully Sponsored by DST-SERB

Internship duration: December 11, 2023 – January 7, 2024

Department of ICT, PDEU Gandhinagar

Valedictory: Date: January 5, 2024 (Friday), Venue: F-204

Department of Information and Communication technology has organized the combined internship programme in the domain of AI/ML techniques for Biometrics and Biomedical Image and Signal Analysis sponsored by SERB, India under VRITIKA Scheme.

DEPARTMENTAL ACTIVITIES

Orientation Programme

The Department of ICT & ECE at Pandit Deendayal Energy University held a four-day orientation program from January 9th to 12th, 2024, to introduce students to faculty, ongoing projects, and future initiatives. Sessions, from 11 AM to 1 PM, welcomed students from ICT batches 21-23 and ECE batches 21-23.

The Department of ICT/ECE held an orientation at Pandit Deendayal Energy University from January 9 to 12, 2024. Expert speakers included Mrs. Smita ben Patel (advanced medication) and Dr. Dhruv Thakkar (psychiatry and insomnia). Students and faculties from various batches attended. Dr. Mohendra Roy welcomed attendees, and Dr. Ganga Prasad Pandey provided an overview of the department. Prof. Dhaval Pujara stressed active participation, and Dr. Paawan Sharma highlighted the role of life skills in academic success. Dr. Thakkar discussed mental health, while Mrs. Patel introduced meditation. The event ended with a vote of thanks from Dr. Roy, followed by lunch for the speakers.

DEPARTMENTAL ACTIVITIES

Visit of President and Chairman of Board of Governors of Pandit Deendayal Energy University

Pandit Deendayal Energy University welcomes the President of University Dr. Mukesh Ambani. He inspired us to set our goals to become no. 1 in India and then across the globe.

The President interacted with students and was eager to know achievements from them. He also visited different facilities and laboratories at different locations including F-Block.

DEPARTMENTAL ACTIVITIES

10th Board of Studies Meeting by Department of Information and Communication technology

The Department of ICT conducted the 10th Board of Studies meeting for significant changes in UG and PG syllabus modification to align our academic course with industry requirements.

DEPARTMENTAL ACTIVITIES

Visit of Vibrant Gujarant Global Summit

ICT & ECE Department faculties and students attended the Vibrant Gujarat Summit-2024. They explored the various prospects of the summit to gain a future perspective on technology and to enhance the industry-academia network.

DEPARTMENTAL ACTIVITIES

Expert Lecture on Robot Operating System

Recently we had a great experience organizing the Robot Operating System (ROS) Expert Lecture Series and Workshop @ ECE Department , PDEU by Industrial expert Dhaval Vyas who really demystified the intricacies of ROS Robotics, with lucid explanation, presentation and demonstrations!! Very glad to see the ECE and ICT students liked these expert sessions and had happy learning experience while getting introduced to such opensource powerful robotics platform called ROS !! This has indeed instigated curiosity among them to start their exploration in world of Interdisciplinary Research offered by the field of Control Systems & Robotics!

DEPARTMENTAL ACTIVITIES

Expert Lecture on Opportunities and Challenges in Cloud Computing

On January 23, 2024, Dr. Sameer Gundurao Kulkarni, an assistant professor from IIT Gandhinagar, delivered a lecture on "Opportunities and challenges in cloud computing" at Pandit Deendayal Energy University. The event, coordinated by Dr. Mohendra Roy and Dr. Manish Kumar, saw the participation of ICT21 students and various faculty members. Dr. Kulkarni discussed cloud computing, its architecture, and distributed environments, highlighting his contributions to GPU virtualization adopted by NVIDIA. The lecture concluded with student interaction, exploring practical applications of cloud computing, and a vote of thanks from Dr. Manish Kumar.

DEPARTMENTAL ACTIVITIES

Expert Lecture on Inter-process communication, multithreading and a deep dive into file sharing and system calls

Speaker: Dr. Amit Mankodi, Assistant Professor at DAIICT, Gandhinagar ,Coordinator: Dr. Manish Kumar and Mrs. Shivangi Mehta

In this lecture, expert explained the overview of the mechanisms of inter-process communication, multithreading and file sharing and system calls. He also discuss about the synchronization, deadlock problem arise due to not sharing the files and threads properly. It includes relocation, swapping, protection, sharing, logical organization, and physical organization. Such interactions motivate the students to explore further opportunities and pave way for their career - be it research or industry.

DEPARTMENTAL ACTIVITIES

Team Kaizen

In the realm of sustainable transportation innovation, the ICT department proudly celebrates its pivotal role within Team Kaizen, the hyper resistance electro prototype electrical vehicle makers representing our institution at the prestigious Shell Eco Marathon. Through our students' expertise in motor control design using MOSFET switching devices, microprocessors, and Embedded C coding, Team Kaisen has achieved unparalleled success, a groundbreaking feat of traveling 200 kilometers on a mere 7 rupees. Moreover, securing the 12th rank in Asia 12 and clinching the 3rd position nationally, with the distinction of being Gujarat's sole representative, underscores the significant impact of our ICT students' contributions on both regional and national levels. This collaborative endeavor not only showcases technical prowess but also cultivates invaluable skills and experiences, fostering personal and professional growth among our students as they continue to drive innovation towards a sustainable future.

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DEPARTMENTAL ACTIVITIES

Placements in ICT ' 19 Batch

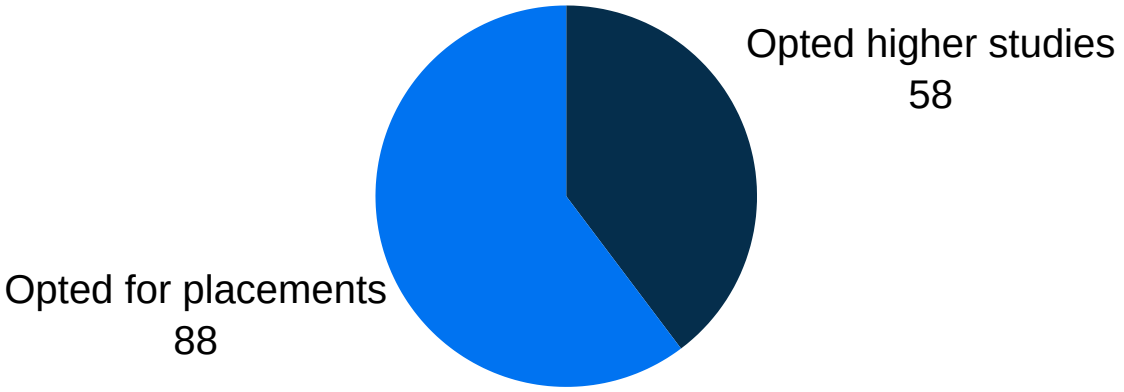
Warmest congratulations to our outstanding fourth-year ICT students for achieving remarkable placements! Your steadfast commitment, resilience, and enthusiasm for engineering have charted a course for a promising future. We take immense pride in your achievements and eagerly anticipate witnessing the positive influence you will undoubtedly have on the world.

Companies Recruited between 2019-23 :

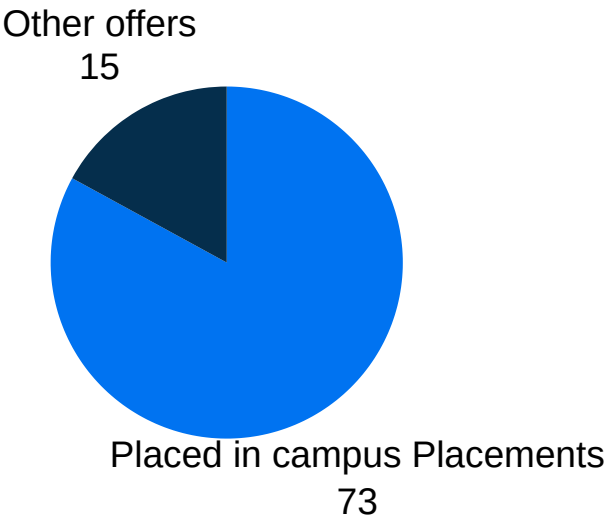
DEPARTMENTAL ACTIVITIES

Placements in ICT ' 19 Batch

- Placement Ratio for Opt-Out Students:



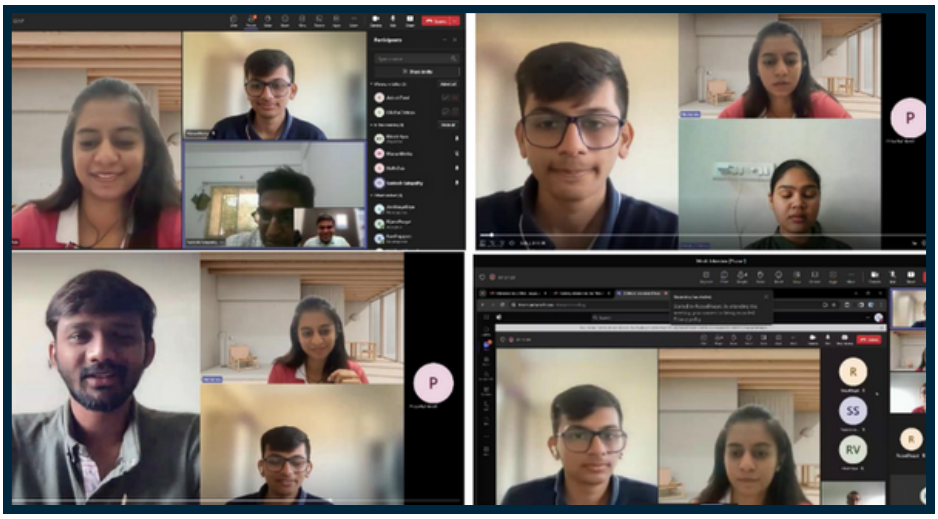
- Placement Ratio for Placement interested students:



- Average Package: 6.17 LPA
- 33 Students received annual CTC of Rs 7 lakh and above and maximum Salary offered was 9 LPA.

DEPARTMENTAL ACTIVITIES

Mock-Interview exercise for ICT'20



The Department of ICT at PDEU organized a valuable "mock-interview" exercise on October 28th, featuring distinguished alumni, Mr. Manan Mehta and Ms. Nidhi Zala, Software Developers at IBM. This initiative aimed to enhance students' interview skills and provide real-world insights. The involvement of alumni bridged the gap between academia and industry, inspiring and preparing students for successful careers. A subsequent session on November 4th extended the experience, with alumni serving as interviewers and offering one-on-one feedback for student improvement. The commitment of alumni, faculty, and students reflects the department's dedication to growth, development, and excellence. The provided word cloud illustrates insightful keywords from the one-on-one feedback, enhancing the learning experience for current students.

FACULTY ACHIEVMENTS

Dr. Devlina Adhikari

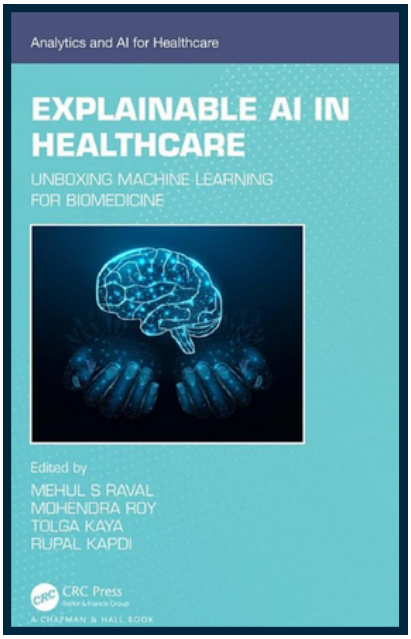
Dr. Devlina Adhikari and her team has successfully received the Patent on "ELIFE BOT : THE AI-ENABLED CHATBOT FOR MENTAL HEALTH"

Abstract of Patent :

eLIFE bot is an AI-enabled chatbot for mental health that uses technologies like AI, NLP, and ML to provide users with a safe and confidential space to discuss their mental health concerns, receive support and guidance, and connect with mental health professionals if necessary. It has unique features such as gratitude logging, jokes, and displaying psychiatrist data if the user seeks professional help.

FACULTY ACHIEVMENTS

Dr. Mohendra Roy



The book "Explainable AI in Healthcare: Unboxing Machine Learning for Biomedicine," edited by Mehul S Raval, Mohendra Roy, Tolga Kaya, and Rupal Kapdi, explores the use of machine learning in healthcare, covering topics like computer vision, diagnostics, therapeutics, preventive healthcare, and Explainable AI (XAI). XAI is emphasized for making machine learning models understandable to healthcare professionals. Intended for healthcare professionals, computer scientists, engineers, and researchers, the book addresses the application of machine learning algorithms to improve patient care.

FACULTY ACHIEVMENTS

Dr. Kamal Garg

1. Journal Publications:
    a. P. Shaik, C. Keçeci, K. K. Garg, M. Ismail and E. Serpedin, "Analysis of Multi-User Based UAV System With Outdated CSI," in IEEE Open Journal of the Communications Society, Dec. 2023. [Impact Factor: 7.9]
    b. Garg, K. K., et al. "On the capacity of a SIM-based cooperative NLOS UVC system with best relay selection." ICT Express, Nov. 2023. [Impact Factor: 5.4]

2. Conference Publication:
    1. P. Shaik, C. Keçeci, K. K. Garg, Ali Boyacı , M. Ismail and E. Serpedin, “Performance of Deep Learning Assisted Visible Light Communications Impaired by Blockages," IEEE Global Communications Conference: Optical Networks and Systems, Kaula Lumpur, Dec. 2023. [Presented in the conference]

3. Keynote Speaker of Distribution of Individual Marks to the Students Using Google App Script
Coordinators: Dr. Kamal K. Garg, Dr. Manish Mandloi
Speaker: Dr. Kamal K. Garg

4. Technical Session Chair at the IEEE Fourth International Conference on Advances in Electrical, Computing, Communications, and Sustainable Technologies (ICAECT 2024)

FACULTY ACHIEVMENTS

Dr. Ritesh Vyas

1.

Pandit Deendayal Energy University (PDEU) organized a 4-week Research Internship (RI) on "Development of AI/ML Techniques for Biometrics and its Applications" from 11/12/2023 to 07/01/2024, featuring Dr. Ritesh Vyas as the expert. The RI focused on advanced biometric technologies and addressed complex problem statements. The SERB-VRITIKA Internship Program, funded by DST-SERB, involved five dedicated interns and enlightening visits to NFSU Gandhinagar and Capgemini Gandhinagar. Interns were appreciated with curated goodies, and the program concluded with technical reports, progress presentations, and potential conference articles, showcasing their exceptional dedication. Gratitude was extended to contributors, emphasizing collaborative efforts in shaping the future of ICT research at PDEU.

FACULTY ACHIEVMENTS

Dr. Ritesh Vyas

2.

SIGMAA
International Conference
Springer

CERTIFICATE

OF APPRECIATION

This Certificate is Proudly Present to

Dr. Ritesh Vyas

(Pandit Deendayal Energy University (PDEU), Gandhinagar, India)

for the outstanding contribution as a
"Session-Chair for Track SS2-A: Recent Trends in Deep Learning for Signal Processing"
in Springer Nature's International Conference SIGMAA-2023,
held on 15th – 16th December, 2023

Prof. Fausto P.G. Marquez (Patron)
Prof. SS Chandel (Patron)
Prof. Atif Iqbal (General Chair)
Prof. R.K. Jarial (General Chair)

Dr. Ritesh Vyas chaired a special session "Recent Trends in Deep Learning for Signal Processing" in the International Conference SIGMAA-2023.

FACULTY ACHIEVMENTS

Dr. Ritesh Vyas

3.

SIGMAA
International Conference
Springer

CERTIFICATE

OF APPRECIATION

This Certificate is Proudly Present to

Dhyey Kasundra, Shreyasi Chudasama, Valsa Kala, Ritesh Vyas

for the presented research paper entitled
"Towards the Localization of Palm-Vein Regions from Hand Dorsal Images"
in Springer Nature's International Conference SIGMAA-2023,
held on 15th – 16th December, 2023

Prof. Fausto P.G. Marquez (Patron)
Prof. SS Chandel (Patron)
Prof. Atif Iqbal (General Chair)
Prof. R.K. Jarial (General Chair)

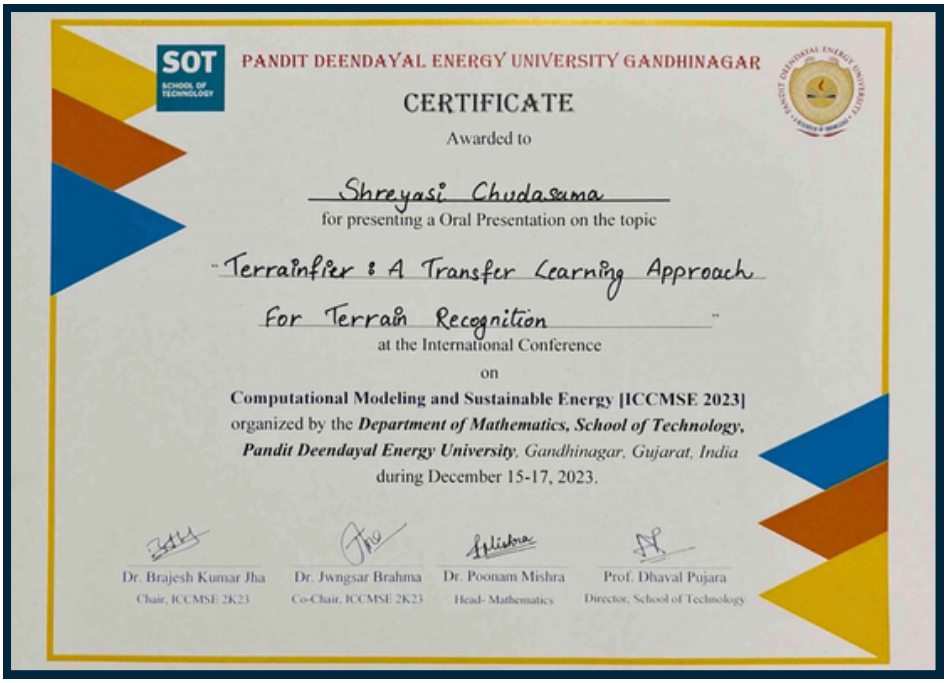
Certificate No.: 2023-100

D. Kasundra, S. Chudasma, V. Kala, R. Vyas*, "Towards the Localization of Palm-Vein Regions from Hand Dorsal Images", In International Conference on Signal, Machines, Automation, and Algorithm: Proceedings of SIGMAA (in-press).

FACULTY ACHIEVMENTS

Dr. Ritesh Vyas

4.



PANDIT DEENDAYAL ENERGY UNIVERSITY GANDHINAGAR

SOT SCHOOL OF TECHNOLOGY

CERTIFICATE

Awarded to

Shreyasi Chudasama

for presenting a Oral Presentation on the topic

"Terrainfier : A Transfer Learning Approach For Terrain Recognition"

at the International Conference

on

Computational Modeling and Sustainable Energy [ICCMSE 2023]

organized by the ***Department of Mathematics, School of Technology, Pandit Deendayal Energy University***, *Gandhinagar, Gujarat, India*

during December 15-17, 2023.

Dr. Brajesh Kumar Jha, Chair, ICCMSE 2K23 | Dr. Jwngsar Brahma, Co-Chair, ICCMSE 2K23 | Dr. Poonam Mishra, Head- Mathematics | Prof. Dhaval Pujara, Director, School of Technology

S. Chudasma D. Kasundra, K. Sarupariya, V. Kala, R. Vyas*, "Terrainifier: A transfer learning approach for Terrain Recognition",Computational Modeling and Sustainable Energy (ICCMSE 2023) (in-press)

5.

·Dr. Ritesh Vyas mentored 2 teams in the Smart India Hackathon (SIH)-2023: Team-VIDYUT, Team-TERRAINIFIER.

FACULTY ACHIEVMENTS

Dr. Ritesh Vyas

6.

Congratulations! It is a pleasure to inform you that the requirements of the Member and Geographic Activities Board Operations Manual have been met and the IEEE Signal Processing Society Student Branch Chapter at the School of Technology-Pandit Deendayal Energy University has been formed. The effective date of this Student Branch Chapter formation is 19 November 2023.

On behalf of the IEEE and its members, I would like to welcome your Branch Chapter to the student program. If you have any questions or need assistance, please do not hesitate to contact our Student Services department at:

Student Services
IEEE Member and Geographic Activities Department
445 Hoes Lane
Piscataway, NJ 08854

·Dr. Ritesh Vyas established the IEEE Signal Processing Society (SPS) Student Branch Chapter of PDEU.

7.

·Dr. Ritesh Vyas mentored 2 teams in the Smart India Hackathon (SIH)-2023: Team-VIDYUT, Team-TERRAINIFIER.

FACULTY ACHIEVMENTS

Dr. Deepak Sahu

Successfully completed an NPTEL Course on 'Python for Data Science' conducted by IIT Madras from July to September 2023, achieving a consolidated score of 71%

Journal

1. D. Sahu, S. Maurya, M. Bansal, and D. Kumar, “Deep learning based relay selection and precoders design for IoT cognitive relay networks”, Physical Communication, Volume 61, 2023, 102195,https://doi.org/10.1016/j.phycom.2023.102195.https://doi.org/10.1016/j.phycom.2023.102195.

Conference

1. D. Sahu, S. Maurya, and M. Bansal, “Energy Efficiency Maximization for MIMO enabled Multi Relay Cognitive Network” 2023 IEEE 7th Conference on Information and Communication Technology (CICT), Jabalpur, India, 2023.

FACULTY ACHIEVMENTS

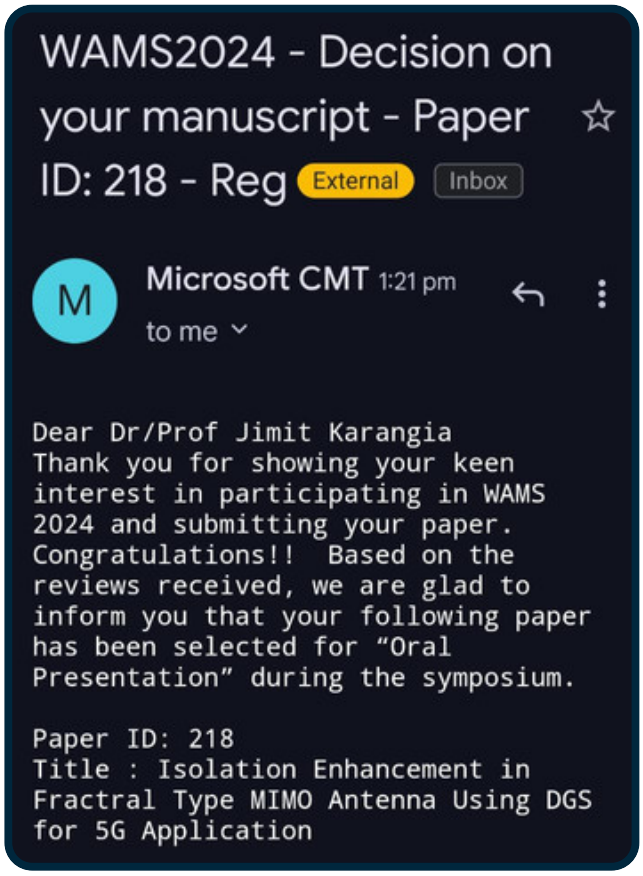
Dr. Manish Kumar

Successfully presented a Paper at the 7th International Conference on Communication Control and Automation organized by PET's Pimpri Chinchwad College of Engineering, Nigdi, Pune, India on 18th - 19 th August 2023.

He also published a conference paper title “Machine learning based approach for metaphoric investigation of ground water quality” in AIP conference preceding, Dec 2023.

STUDENT ACHIEVMENTS

Jimit Karangia
ICT'21



He published a research paper with faculties Dr. Vivek Kumar Pandit and Dr. Dhaval Pujara titled "Isolation Enhancement in Fractral Inspired MIMO Antenna Using DGS for 5G Application"

The paper was selected for Oral Presentation in "Wireless Antenna and Microwave Symposium 2024" (WAMS 2024).

TECHNICAL ARTICLE

Dr. Gangaprasad Pandey

Aditya L1 Mission: Illuminating the Mysteries of Our Sun

Introduction:

In the vastness of space, our Sun reigns supreme, its brilliance casting light upon the solar system and nurturing life on Earth. Yet, despite its familiarity, the Sun holds secrets that continue to elude our understanding. To unlock these mysteries and delve into the heart of our celestial neighbor, the Indian Space Research Organisation (ISRO) embarked on a groundbreaking mission - Aditya L1. In this comprehensive article, we will delve deep into the intricacies of the Aditya L1 mission, exploring its objectives, instrumentation, scientific significance, and the broader implications for humanity's quest to comprehend the cosmos.

Exploring the Origins of Aditya L1:

The genesis of the Aditya L1 mission can be traced back to ISRO's enduring commitment to advancing space exploration and scientific research. With a legacy of successful missions, including the Chandrayaan and Mars Orbiter missions, ISRO has established itself as a formidable force in the realm of space exploration. Building upon this legacy, the Aditya L1 mission represents a bold endeavor to unravel the mysteries of our nearest star - the Sun.

Named after the Sanskrit word for "sun," Aditya L1 embodies India's cultural heritage and scientific ambition. The mission aims to study the Sun's outermost layer - the corona - with unprecedented precision and detail. By observing solar phenomena such as solar flares, coronal mass ejections (CMEs), and magnetic storms, scientists hope to gain insights into the fundamental processes governing the Sun's behavior and its influence on space weather.

Different Lagrange Points:

Lagrange points are positions in space where objects sent there tend to stay put. At Lagrange points, the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. These points in space can be used by spacecraft to reduce fuel consumption needed to remain in position.

Lagrange Points are positions in space where the gravitational forces of a two body system like the Sun and the Earth produce enhanced regions of attraction and repulsion. These can be used by spacecraft to reduce fuel consumption needed to remain in position.

Lagrange points are named in honor of Italian-French mathematician Josephy-Louis Lagrange.

There are five special points where a small mass can orbit in a constant pattern with two larger masses. The Lagrange Points are positions where the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. This mathematical problem, known as the "General Three-Body Problem" was considered by Lagrange in his prize winning paper (Essai sur le Problème des Trois Corps, 1772).

Of the five Lagrange points, three are unstable and two are stable. The unstable Lagrange points - labeled L1, L2 and L3 - lie along the line connecting the two large masses. The stable Lagrange points - labeled L4 and L5 - form the apex of two equilateral triangles that have the large masses at their vertices. L4 leads the orbit of earth and L5 follows.

TECHNICAL ARTICLE

Dr. Gangaprasad Pandey

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The L1 point of the Earth-Sun system affords an uninterrupted view of the sun and is currently home to the Solar and Heliospheric Observatory Satellite SOHO.

The L2 point of the Earth-Sun system was the home to the WMAP spacecraft, current home of Planck, and future home of the James Webb Space Telescope. L2 is ideal for astronomy because a spacecraft is close enough to readily communicate with Earth, can keep Sun, Earth and Moon behind the spacecraft for solar power and (with appropriate shielding) provides a clear view of deep space for our telescopes. The L1 and L2 points are unstable on a time scale of approximately 23 days, which requires satellites orbiting these positions to undergo regular course and attitude corrections.

NASA is unlikely to find any use for the L3 point since it remains hidden behind the Sun at all times. The idea of a hidden planet has been a popular topic in science fiction writing.

The L4 and L5 points are home to stable orbits so long as the mass ratio between the two large masses exceeds 24.96. This condition is satisfied for both the Earth-Sun and Earth-Moon systems, and for many other pairs of bodies in the solar system. Objects found orbiting at the L4 and L5 points are often called Trojans after the three large asteroids Agamemnon, Achilles and Hector that orbit in the L4 and L5 points of the Jupiter-Sun system. (According to Homer, Hector was the Trojan champion slain by Achilles during King Agamemnon's siege of Troy). There are hundreds of Trojan Asteroids in the solar system. Most orbit with Jupiter, but others orbit with Mars. In addition, several of Saturn's moons have Trojan companions.

In 1956 the Polish astronomer Kordylewski discovered large concentrations of dust at the Trojan points of the Earth-Moon system. The DIRBE instrument on the COBE satellite confirmed earlier IRAS observations of a dust ring following the Earth's orbit around the Sun. The existence of this ring is closely related to the Trojan points, but the story is complicated by the effects of radiation pressure on the dust grains.

In 2010 NASA's WISE telescope finally confirmed the first Trojan asteroid (2010 TK7) around Earth's leading Lagrange point.

Finding the Lagrange Points

The easiest way to understand Lagrange points is to think of them in much the same way that wind speeds can be inferred from a weather map. The forces are strongest when the contours of the effective potential are closest together and weakest when the contours are far apart.

TECHNICAL ARTICLE

Dr. Gangaprasad Pandey

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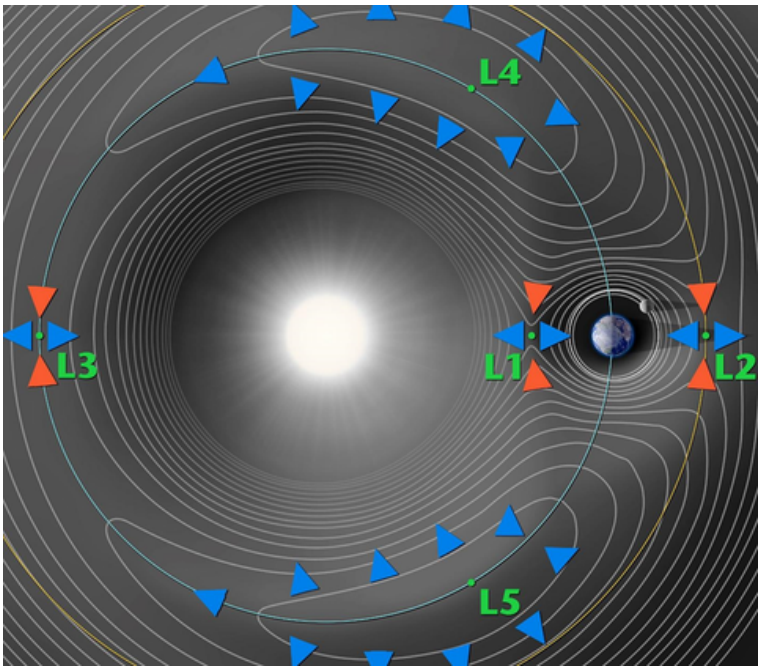

L4 and L5 correspond to hilltops and L1, L2 and L3 correspond to saddles (i.e. points where the potential is curving up in one direction and down in the other). This suggests that satellites placed at the Lagrange points will have a tendency to wander off (try sitting a marble on top of a watermelon or on top of a real saddle and you get the idea). But when a satellite parked at L4 or L5 starts to roll off the hill it picks up speed. At this point the Coriolis force comes into play - the same force that causes hurricanes to spin up on the earth - and sends the satellite into a stable orbit around the Lagrange point.

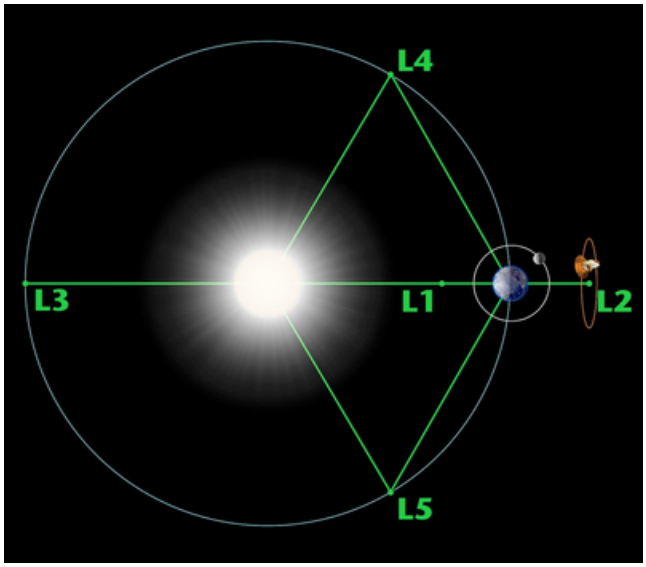

Fig. 1: position of different Lagrange Points in space

TECHNICAL ARTICLE

Dr. Gangaprasad Pandey

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Objectives of the Aditya L1 Mission:

The Aditya L1 mission is driven by a set of ambitious objectives aimed at advancing our understanding of solar dynamics and space weather. Chief among these objectives is the study of the solar corona, a region of intense magnetic activity and plasma dynamics. By observing the corona in various wavelengths, the mission seeks to unravel the mysteries of its structure, temperature, and dynamics, shedding light on phenomena such as solar flares and CMEs.

Another key objective of the Aditya L1 mission is to investigate the origins of the solar wind - a stream of charged particles emanating from the Sun. By analyzing the composition, speed, and density of the solar wind, scientists aim to decipher its role in shaping the solar environment and its impact on Earth's magnetosphere and ionosphere. Understanding the dynamics of the solar wind is crucial for space weather forecasting and mitigating its effects on satellite communications, power grids, and navigation systems.

Instrumentation and Payload:

Central to the success of the Aditya L1 mission is its suite of cutting-edge instruments and payload systems. These instruments have been meticulously designed and calibrated to capture high-resolution images of the solar corona, analyze solar spectra, and measure solar wind parameters with unparalleled accuracy.

One of the key instruments aboard the Aditya L1 spacecraft is the Visible Emission Line Coronagraph (VELC). Developed in collaboration with the Indian Institute of Astrophysics (IIA), Bengaluru, VELC is equipped with advanced optics and detectors capable of capturing images of the solar corona in visible and near-ultraviolet wavelengths. By studying the dynamics of coronal structures and their evolution, scientists hope to gain insights into the processes driving solar flares and CMEs.

In addition to VELC, the Aditya L1 payload includes the Solar Ultraviolet Imaging Telescope (SUIT), which will focus on observing the chromosphere and the transition region of the Sun's atmosphere. These observations will provide valuable data on the temperature and density gradients within the solar atmosphere, offering clues to the mechanisms underlying solar activity.

Furthermore, the Aditya Solar Wind Particle Experiment (ASPEX) will analyze the composition and properties of the solar wind. By measuring the energy and momentum of solar wind particles, ASPEX will help scientists understand the processes responsible for accelerating and heating the solar wind, offering insights into its origins and dynamics.

TECHNICAL ARTICLE

Dr. Gangaprasad Pandey

Contd..

Scientific Significance and Implications:

The Aditya L1 mission holds immense scientific significance, with the potential to revolutionize our understanding of solar physics and space weather. By unraveling the mysteries of the solar corona and solar wind, scientists aim to address fundamental questions about the Sun's structure, dynamics, and evolution.

Moreover, the data collected by the Aditya L1 mission will have far-reaching implications for space weather forecasting and Earth's technological infrastructure. Solar flares and CMEs can unleash powerful bursts of radiation and charged particles that pose risks to astronauts, satellites, and spacecraft in orbit. By improving our ability to predict and mitigate these events, the Aditya L1 mission will enhance the safety and reliability of space missions and satellite operations.

Furthermore, the insights gained from the Aditya L1 mission will advance our understanding of the Sun's influence on Earth's climate and environment. Solar variability has been linked to changes in Earth's climate, atmospheric circulation, and weather patterns. By studying the mechanisms driving solar variability, scientists can improve climate models and enhance our ability to predict and adapt to future changes in Earth's climate.

Collaborations and International Partnerships:

The success of the Aditya L1 mission is built upon collaboration and partnership, both within India and internationally. ISRO has collaborated with leading research institutions and space agencies, including NASA and ESA, to develop and implement the mission's scientific objectives and instrumentation.

Moreover, the Aditya L1 mission is part of a broader international effort to explore the Sun and its influence on the solar system. By sharing data and resources, scientists from around the world can collaborate on research projects and advance our collective understanding of solar physics and space weather.

Conclusion:

In conclusion, the Aditya L1 mission represents a triumph of scientific ingenuity and exploration. By studying the Sun's corona and solar wind with unprecedented precision, the mission promises to unlock the secrets of our nearest star and shed light on its influence on the solar system and beyond.

As humanity ventures forth into the cosmos, missions like Aditya L1 remind us of the boundless potential of space exploration to expand our horizons and deepen our understanding of the universe. With each new discovery, we come one step closer to unraveling the mysteries of the cosmos and realizing the full extent of our cosmic heritage.

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- Master of Computer Applications
- M. Sc. in Computer Science/ Information Technology/ Mathematics/ Statistics

SALIENT FEATURES

Cutting-edge Curriculum: A comprehensive curriculum encompassing the theoretical foundations and practical applications of AI, encompassing diverse areas like machine learning, deep learning, computer vision, and natural language processing.

Experienced Faculties: Globally renowned faculty members with diverse research experiences through PhDs and Postdocs.

Research-oriented curriculum: The 1st year of the program is dedicated to fundamentals and the 2nd year is for the research based projects. The program emphasises the art of research paper writing from the 1st semester itself.

Industry-academia collaboration for AI applications: The student internship and projects are in collaboration with various nearby industries and the institute of National Importance.

Exposure to cutting edge tools and technologies related to AI and ML: The department is equipped with laboratory facilities with the cutting edge tools and hardware.

Ethics and Responsibility: The program also includes societal issues such as ethical and responsible use of AI.

Start-up Ecosystem: The program is designed to motivate the students for start-up culture and entrepreneurship through the Incubation facility of the University.

Exposure to the AI community nationally and globally: The faculties encourage the students to participate in international research through their international collaborative projects.

STATE OF THE ART ENGINEERING LAB

- The M Tech AI program offers labs with computers that can be used to train and run artificial intelligence (AI) programs. The labs have computers with NVIDIA GPUs, which are good for training AI programs.
- The program is also supported by an Internet of Things (IoT) lab, and VLSI lab which has IoT devices, software for designing hardware to deploy AI algorithms in hardware.

FINANCIAL ASSISTANCE

- 12,400 INR/month for GATE qualified and 8,000 INR/month for non-GATE qualified students.
- Travel supports up to 50,000 INR for attending conferences/workshops across globe.
- Research grants up to 2,50,000 INR for Student Research Project.
- Other financial support for incubation and start-up programs through IIC, PDEU.

SOFTWARE FACILITIES

MATLAB, jupyter ANACONDA, VIVADO, TensorFlow, TensorRT, PyTorch

COLLABORATORS AND RECRUITERS

Capgemini, Intellias

APPLICATION DEADLINES : 31ST MARCH 2024

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