

PULSE



SAKTHI POLYTECHNIC COLLEGE
 (AICTE Approved || Government Aided Institution)
 (NBA Accredited – Civil, Mech., ECE, EEE and Metallurgy)
SAKTHI NAGAR – 638 315



EDITORIAL BOARD

Chief Editor Mr.K. SARAVANAN Head of the Department	Staff Editor Mrs. R.Chitra W/S Instructor	Student Editors Mr. M.Barathpriyan Mr. K. Ayyannan
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Volume - 3
Issue- 2

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



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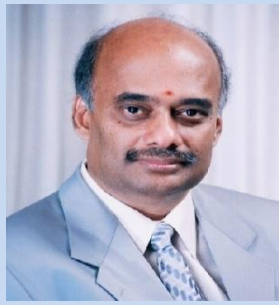
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NEWS LETTER 2025-2026 – EVEN SEM



Padma Bhushan
Arutselvar Dr. N. MAHALINGAM, B.Sc., F.I.E.
Founder – Sakthi Polytechnic College.

Arutselvar DR. N. MAHALINGAM a legendary Gandhian by principle, a patriotic and proud son of the soil, Dr. N. MAHALINGAM was a man of pious living. His exemplary social contributions in numerous fields of socio-economic spectrum have benefited scores of institutions and individuals inspired by him during his long career. The government of India duly recognized his meritorious deeds and honored him with the prestigious Civilian Award - PADMA BHUSHAN. Dr. N. Mahalingam is also a recipient of many awards and titles conferred upon him by various educational, social and cultural institutions. As an industrialist he has several important positions and has played major roles fostering the development of agricultural, industrial, human resource and institutional development at the State and National levels. He is the Pioneer of sugar industry. He has rendered notable literary contributions. His social and humanitarian considerations took his journey beyond the boundaries of industries and scholarly tents he nurtured.

**CHAIRMAN****Dr. M. MANICKAM, M.sc., M.B.A.**

Dr. M. Manickam, the eldest son of Arutchelvar Dr N Mahalingam, is an industrialist, educationalist and an outstanding administrator with an M.B.A from the University of Michigan, U.S.A. He is the chairman of NIA educational institutions and Vice- Chairman of Sakthi Sugars. Under his capable guidance and stewardship, Sakthi Sugar Mills has expanded and set-up institutions in many places. Through his constant efforts, Sakthi Auto Components Ltd has modernized and expanded. He had been the President of the "All India Sugar Manufacturers Association" and currently he is the President of Indian Sugar Technologists Association. He was awarded an Honorary Doctorate Degree by Tamil Nadu Agricultural University. He evinces keen interest in the development of Good Infrastructure in the technical institute.

**CORRESPONDENT****THIRU.G MUNIASAMY, B.TECH., MBA**

Sakthi Polytechnic College is an Institution with a difference, started with the mission of providing quality technical education to rural youth at affordable cost. It is the vision of our beloved Founder Chairman Arutchelvar Dr. N Mahalingam, to empower the rural youth with technical knowledge and skills to train them as the most suited manpower to meet the needs and demands of the growing industrial scenario. We

ensure that with the vast potentials for growth and avenues for development, Sakthi Polytechnic College will enhance the capabilities and nurture the latent talents of youth to emerge as entrepreneurs rather than job seekers.

**PRINCIPAL****Dr.S.SENTHILARASU M.E.,Ph.D.,MISTE.,
PRINCIPAL (IN-CHARGE)**

Technology is the need of the hour. In this era of Globalization when there is a need for an enormous number of technically qualified personnel, Polytechnics play a vital role in supplying the Industries, the inputs of their choice. Keeping this in mind our beloved Founder Arutselvar Padma Bhusan Dr N. Mahalinam established Sakthi Polytechnic College with a foresight and vision in this predominantly rural and agricultural area of Sakthi Nagar. The main aim of this Institution is to bring technical education within the reach of the rural youth. We ensure that our Institution with its excellent infrastructure, well qualified staff and conducive atmosphere for learning will go a long way in motivating the rural students to become leaders of technology in future. With Sakthi to lead them, Technical Education is no longer a distant dream for rural youth but very much a reality within their reach.

**DIRECTOR****DR. K.R MUTHUSWAMY M.E., Ph.D.,**

“A desire can change nothing, a decision can change something but a determination can change everything”. It gives me immense pleasure to welcome you all to Sakthi Polytechnic College, an eco-friendly campus that strives with a goal to attain excellence by empowering students with sound knowledge, wisdom and experience. Our strength lies in creating pleasant ambience with an excellent infrastructure, qualified and experienced faculty, commitment to personal care, motivation to excel in academic/extracurricular activities and continuous interaction with industry. Over the past 41 years, the college has witnessed a strong blend of state-of-the-art infrastructure and dedicated human resource committed to provide professional education with thrust on creativity and innovation. The motivating environment in SPC for knowledge assimilation, generation and dissemination with a sense of social responsibility, human values and concern for environment has carved a niche for itself among the best technical Institutes.

HOD's Desk



I am pleased to lead the Department of Electronics and Communication Engineering at Sakthi Polytechnic College. Our department is dedicated to imparting quality technical education, with a strong emphasis on innovation, ethics, and practical learning. We aim to develop competent engineers who are industry-ready and socially responsible. To support this goal, we regularly conduct seminars, workshops, industrial visits, and hands-on training sessions. Our focus also extends to soft skills, wellness programs, and entrepreneurial development to ensure holistic student growth. The faculty team is highly committed and plays a key role in guiding and mentoring students. We also encourage strong industry-institute interaction and alumni engagement to bridge the gap between academics and real-world applications. I urge all students to stay motivated, embrace continuous learning, and actively participate in all academic and co-curricular initiatives. Together, let us work towards achieving excellence and building a better future.

– **Mr. K. Saravanan, M.E., M.S., Lecturer (Selection Grade I), HOD In-Charge**

VISION OF THE INSTITUTE

To excel in imparting value-based technical education to produce industry-competent engineers and socially responsible citizens.

MISSION OF THE INSTITUTE

M1: To impart transformative technical education through innovative teaching and learning methodologies.

M2: To enhance academia-industry partnership through internships and collaborative projects.

M3: To impart requisite skills to enhance employability and entrepreneurship.

VISION OF THE DEPARTMENT

To become a center of repute and to impart high-quality technical education in the field of Electronics and Communication Engineering to develop highly competent and ethical engineers.

MISSION OF THE DEPARTMENT

M1: To create a learning environment for excellence in the field of Electronics & Communication Engineering.

M2: To provide ethical and value-based education through various activities addressing societal needs.

M3: To instill self and continuous learning attitude, professional ethics, and entrepreneurial skills.

M4: To strengthen the industry-institute partnership through various interactions.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To prepare the students to take up careers in Communication Networking, Embedded Systems, VLSI Design, and Electronic Manufacturing Industries.

PEO2: To prepare the students to pursue higher education and adopt emerging trends through continuous learning.

PEO3: To prepare the students to become socially responsible and successful entrepreneurs.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Apply the fundamental concepts of Electronics and Communication Engineering in designing various systems and applications in domains like Communication, Networking, Embedded Systems, and VLSI.

PSO2: Simulate, verify, and test electronic circuits using state-of-the-art software tools.

Department of Electronics and Communication Engineering – Events Summary

INDEX OF ACTIVITIES (2025-2026)

S. No.	Name of the Event	Date
1	Department Advisory Board (DAB) Meeting	19.12.2025
2	Educational Tour (II Year)	25.12.2025
3	“Ulagam Ungal Kayil” Laptop Distribution Programme	05.01.2026
4	Pongal Celebration	13.01.2026
5	Parents-Teachers Meeting (Even Semester)	20.03.2026
6	Forum Meeting - Fundamentals of Computer Network and Security	04.03.2026
7	Internet of Things (IoT) Value Added Course	17.04.2026 - 02.05.2026
8	Skill Development Program - Spoken English Classes	2025-2026
9	Staff Achievements	2025-2026
10	Student Achievement - District Kabaddi Championship	2025-2026

Pongal Celebration – ECE Department



Skill Development Program – Spoken English Classes for II Year ECE Students



PARENTS TEACHER MEETING - EVEN SEM



The image is a composite of two parts. The left part is a promotional poster for a forum. It has a pink and white floral background. At the top left is the Sakthi Polytechnic College logo, which includes a gear and a book. Next to it is the text 'SAKTHI POLYTECHNIC COLLEGE SAKTHI NAGAR, 638 315' and a small portrait of a man. Below this is 'DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING'. The main title is 'FORUM METTING' in large pink letters, followed by 'FUNDAMENTALS OF COMPUTER NETWORK AND SECURITY' in blue. The resource person is 'CHANDRASEKARAN.R', a 'SENIOR CLOUD CONSULTANT' from 'STRATEQ Group MALAYSIA.'. It mentions 'VIRTUAL MODE' and the date 'MARCH WEDNESDAY 04' with the time '1:30PM TO 4:30 PM'. The venue is 'Meeting Hall, SPC.'. A Google Meet link is at the bottom: 'HTTPS://MEET.GOOGLE.COM/HZN-QBQQ-KUN'. The bottom of the poster is decorated with pink roses. The right part is a photograph of a lecture hall. Students in white shirts and blue trousers are seated in rows of yellow plastic chairs, facing a stage. On the stage, a man is standing near a podium, and a large screen displays a presentation. The room has purple curtains and posters on the walls.

SAKTHI
POLYTECHNIC COLLEGE
SAKTHI NAGAR, 638 315

DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING

FORUM METTING

FUNDAMENTALS OF COMPUTER
NETWORK AND SECURITY

RESOURCE PERSON: CHANDRASEKARAN.R
SENIOR CLOUD CONSULTANT
STRATEQ Group
MALAYSIA.

VIRTUAL MODE

MARCH
WEDNESDAY 04 1:30PM TO 4:30 PM

venue: Meeting Hall,
SPC.

[HTTPS://MEET.GOOGLE.COM/HZN-QBQQ-KUN](https://meet.google.com/HZN-QBQQ-KUN)

The whiteboard contains the following handwritten code:

```

int main = 10;
int value = 10;
int count = 10;

void Setup()
{
    printf("Enter data, count\n");
    while(count > 0)
    {
        int data;
        int count;
        printf("Enter data, count\n");
    }
}

void Insert()
{
    printf("Enter data, count\n");
    while(count > 0)
    {
        int data;
        int count;
        printf("Enter data, count\n");
    }
}

void Delete()
{
    printf("Enter data, count\n");
    while(count > 0)
    {
        int data;
        int count;
        printf("Enter data, count\n");
    }
}

```

The diagram shows a linked list structure with nodes containing data and pointers to the next node.

PARENTS TEACHER MEETING - EVEN SEM



ECE FORUM MEETING - BASIC SOLID STATE DEVICES



STAFF ACHIEVEMENTS

- Mr. K. Saravanan, HOD I/C, ECE, presented a paper titled "Implementation of a Low-Power IoT System for Smart Disaster Management using LoRaWAN" in ICASER 2026 organized by JKK Munirajah College of Technology on 13.04.2026.
- Mr. V. Naveenkumar, Lecturer/ECE, participated in the One Day Faculty Development Program on "AI-Powered Teaching and Learning Methods" organized by Nanjiah Lingammal Polytechnic College on 26.04.2026.
- Mr. V. Naveenkumar, Lecturer/ECE, successfully completed a One Week Faculty Development Program on "Smart Sensors, Smart Analytics & Smart Automation (Online Mode)" organized by Bannari Amman Institute of Technology from 06.04.2026 to 10.04.2026.
- Mr. V. Naveenkumar, Lecturer/ECE, presented a paper titled "Implementation of a Low-Power IoT System for Smart Disaster Management using LoRaWAN" in ICASER 2026 organized by JKK Munirajah College of Technology on 13.04.2026.
- Mrs. A. Gowthami, Lecturer/ECE, presented a paper titled "Implementation of a Low-Power IoT System for Smart Disaster Management using LoRaWAN" in ICASER 2026 organized by JKK Munirajah College of Technology on 13.04.2026.

DEPARTMENT OF ECE

Name of the Faculty	Faculty as participants in Faculty development/training activities/STTPs		
	CAY 2025-2026	CAYm1 2024-2025	CAYm2 2023-2024
K. Saravanan	-		1
A. Valarmathi	4	-	1
V. Naveenkumar	4	1	3
A. K. Gowthami	3	-	-
A.Marimuthu	1	-	-

STUDENT ACHIEVEMENT



INTERNSHIP DETAILS 2025-26

ACADEMIC YEAR 2025-26					
S. NO	NAME OF THE STUDENT	NAME OF THE INDUSTRY	ADDRESS / PLACE OF TRAINING	DATE	NO. OF DAYS
1	RITHISA.P	SIVA ROBOTICS	29,NACHYAPPA,SPR COMPLEX,ERODE	12-05-24 to 27-05-24	15
2	ROHINI.A.N				
3	RITHANISH.K				
4					
5	NITHESWARAN.J				
6	VISWANATHAN.P.S				
7	KAVIN.V				
8	PRITHIVIRAJ.S.R				
9	SRI NISANTH.R				
10	MEIYARASU.M				
11	BHARANI.T.V				
12	DHILIP.P				
13	PARAMESHWARAN				
14	DHARUNRAJA.D.N				
15	LINGESHKUMAR				
16	MUGUNTHAN				
17	NATHESH.R				
18	RANJITHKUMAR.A				
19	MAHAPRABHU				
20	KAVYASRI.E				
21	KAVISRI.S				
22	AATHISANKARAN.V.K				
23	RITHISH KUMAR.M				
24	SARANKUMAR.A				
25	MEI AZHAGAN.P				
26	THIRUMALAI.S				
27	HARSHAVARTHAN.N				
28	SANDHRU.M				
29	MAGADHI.K				
30	VICKRANTH.T				
31	JEEVITHA.V				
32	SASHMITHA.E				
33	BARATHPRIYAN.M				
34	ANBU A	SAKTHI SUGARS LIMITED	SAKTHI NAGAR,APPAKUDAL,TAMILNADU	13-05-24 to 27-05-24	15
35	DURKESH K				
36	LAKSHAN S				
37	MANIKANDAN S				
38	NIDARSHAN N				
39	PRADEEP M				
40	RAVICHANDRAN M				
41	SANJAY P				
42	SARANKUMAR A				
43	SRIDHAR K				
44	DEEBAK P				
45	DILSONMATHEW J				
46	GOKUL KANNAN M				
47	HARSHAVARTHAN N				
48	JAYASUDAR A				
49	MAHINTHAR T				
50	MANOJ M				
51	MUGUNTHAN M				
52	RITHANISH K				
53	RITHIKASHREE K				
54	SANJAY J				
55	AKASH S				
56	AYYASAMY E				
57	GANESAN C				
58	GOKULNATH P				
59	PAVITHRA K				
60	PRAVIN M				
61	KISHOREKANTH M				
62	KAVINKUMAR S				

Summary

Department ELECTRONICS AND COMMUNICATION ENGINEERING

S.No	Passed out Batch	Strength of Students	No of Students attended Internship Training
1	2025-2026	62	62

SAKTHI POLYTECHNIC COLLEGE, SAKTHI NAGAR - 638 315

GOVT.AIDED | APPROVED BY AICTE & AFFILIATED TO DOTE, CHENNAI

NBA ACCREDITED PROGRAMMES - CIVIL, MECH, MET, EEE & ECE

PLACEMENT RECORD - 2025-26

ELECTRONICS AND COMMUNICATION ENGINEERING

AYANNAN K
ZETTAGNE TECHNOLOGIES

BHARANIKUMAR S
SCHNEIDER ELECTRIC, I & T DEFENSE, TYS TS & PRICOL

BOOPALRAJ K
CENTUM ELECTRONICS, TEXMO ROYAL ENFIELD, LHM & PRICOL

DHARANI R
ROYAL ENFIELD, TYS TS, TEXMO & PRICOL

GOUTHAM SAKTHI S
ZETTAGNE TECHNOLOGIES

GOWTHAM A
ZETTAGNE TECHNOLOGIES

HARIPRASATH S
ROYAL ENFIELD, TYS TS, LHM, TEXMO & PRICOL

HARISH S
BORGWARNER, TYS TS, PRICOL & TEXMO

JEEVA P
BORGWARNER, GLOBE & TEXMO

JEEVANANTHAN N
BORGWARNER, ROYAL ENFIELD, LHM, TEXMO & PRICOL

KISHORE M
ROSELTECH SYS

LOGESHWARAN S
ROYAL ENFIELD, LHM, TEXMO, TYS TS & PRICOL

SABARI D
CENTUM ELECTRONICS, WAKEFIT INDUSTRY & BRAKES INDIA

SHANKARSAMY P
ZETTAGNE TECHNOLOGIES

SINGARAVELAN S
ZETTAGNE TECHNOLOGIES

SAVIDENTHIRA P
ROSELTECH SYS

SURESHKUMAR M
ROYAL ENFIELD

THARAMITHARAN T
ZETTAGNE TECHNOLOGIES, PRICOL

DIVAKAR V
CENTUM ELECTRONICS & BRAKES INDIA

TAMILARASAN M
CENTUM ELECTRONICS, BRAKES INDIA & LHM

DIVYA P
CENTUM ELECTRONICS, TYS TS & LHM

KIRUBA SRI C
ROSELTECH SYS

MAHAJAYASRI K
ROSELTECH SYS

SANJAY S
ZETTAGNE TECHNOLOGIES, PRICOL

MANIKANDAN C
ZETTAGNE TECHNOLOGIES

MANIKANDAN R
TYS TS

HANUJ J
CENTUM ELECTRONICS, TEXMO & PRICOL

MATHIAZHAGAN E
TEXMO & PRICOL

MONITH N
LHM, TYS TS, TEXMO & PRICOL

MUGUNTHAN S
ZETTAGNE TECHNOLOGIES

NAVEEN M
TYS TS, TEXMO, LHM & PRICOL

PARTHIPAN A
CENTUM ELECTRONICS, TEXMO, GLOBE, TYS TS, ROYAL ENFIELD & PRICOL

PERIYASAMY T
LHM & TEXMO

POOMIKA B
ROSELTECH SYS

RAGANAN T
THIRUMALA ELECTRICALS & TYS TS

RAGUNANDHAN T
CENTUM ELECTRONICS, TYS TS, TEXMO, ROYAL ENFIELD, BORGWARNER, LHM & PRICOL

HIGHEST SALARY PACKAGE : RS.21,000 / MONTH / AVERAGE SALARY PACKAGE : RS.18,000 / MONTH

NO.OF. STUDENTS ADMITTED	NO.OF STUDENTS OPTED FOR HIGHER STUDY	NO.OF STUDENTS REGISTERED FOR PLACEMENT	NO.OF STUDENTS PLACED	NO.OF OFFERS
44	08	36	36	94

RECRUITERS 2025-26

OFFERS - 5 / CTC-18,000 / MONTH

OFFERS - 1 / CTC-20,800 / MONTH

OFFERS - 69 / CTC-14,500 / MONTH

OFFERS - 10 / CTC-20,000 / MONTH

OFFERS - 8 / CTC-18,500 / MONTH

OFFERS - 8 / CTC-20,500 / MONTH

OFFERS - 14 / CTC-17,000 / MONTH

OFFERS - 4 / CTC-18,000 / MONTH

OFFERS - 15 / CTC-17,500 / MONTH

OFFERS - 01 / CTC-16,500 / MONTH

OFFERS - 3 / CTC-21,100 / MONTH

OFFERS - 2 / CTC-18,000 / MONTH

OFFERS - 12 / CTC-21,000 / MONTH

OFFERS - 01 / CTC-18,000 / MONTH



STUDENT CORNER

VISWANATHAN II YEAR



K. AYYNNAN- III YEAR

தனித்தனிப்பிக்கை கதை.

ஒரு பூங்கா போன்ற ஒன்றை பதினாறுதான் கோட்டைக் கதையாகத் தகவலால் திரிந்து தான் வெற்றி வெற்றி பெற்றால் நாட்டின் ஒரு பகுதி தான்மாத வடிவங்கமும் தோன்றல் தோன்றல்களை "கை வெட்டப்படு" மக்கள் பாவாடாகப் போகித்து பயந்து யாறும் போட்டியில் கலந்து கொள்ள கிஸ்தல ஒரு "ஒரு அனாதைகள் மட்டும் போட்டியில் கலந்து கொள்ள முன் வந்தான் 'போட்டியில்' தோன்று கிட்டல் தகவலை வெட்டி விடுவார்கள். உன்னைய உதிர்ந்தாய் என்னவாகும்? என்னார்கள் அவன் சொன்னான் ஜயா பவன்தான் தானும் ஒரு பூங்கா தோன்றல் தகவல் தானே போகும். உயிரிஸ்தலம்' என்று கூறு விட்டு கோட்டைக் கதையை அனாதைகள் தனித்தனி. என்ன பதிக்கம்! கதையாக் சட்டெனத் திரிந்து. கொண்டு. ஏனென்தான் கோட்டைக் கதையில் தாழ்த்தப்பட்ட போட்டியில்லை திரிந்து தான் கிதித்து பல பீஸ் அட்டி. விடுவோமே - எதை யானது கிதித்து அடுவோமே என்று எதிரும் "முடிக்கிக்காமலேயே" விட்டு விடுகிறார்கள்.

அனாதைகளும் அதித்து முயல் - அனாதை
கதையில் முயல்கள் தோல்விக்கு
முயலாமை காரணம். ...

தனித்தனி...

ALUMNI CORNER



S.Abdul Vaduth (Alumni)

Our alumni continue to make us proud through their achievements in various fields. They regularly interact with students by sharing their knowledge and industry experience. Their guidance motivates students to achieve their career goals. We thank all our alumni for their continued support and connection with the department.

ஊக்கமூட்டும் கதை-ஒரு ஆசிரியரின் உண்மையான வெற்றி

ஒரு பள்ளியில் இரண்டு ஆசிரியர்கள் பணியாற்றினர். இருவரும் சிறந்த அறிவும் அனுபவமும் கொண்டவர்கள். ஆனால் அவர்களின் கற்பிக்கும் முறை வேறுபட்டது.

முதல் ஆசிரியர் பாடத்தை முடிப்பதிலேயே கவனம் செலுத்தினார். இரண்டாவது ஆசிரியர், மாணவர்கள் பாடத்தைப் புரிந்துகொள்வதோடு மட்டுமல்லாமல், அவர்களின் நம்பிக்கையையும் வளர்க்க வேண்டும் என்று எண்ணினார். ஒவ்வொரு மாணவரின் திறமையையும் கண்டறிந்து, அவர்களை ஊக்குவித்து, தோல்வியை அஞ்சாமல் மீண்டும் முயற்சி செய்யச் செய்தார்.

பல ஆண்டுகளுக்குப் பிறகு, அந்தப் பள்ளியில் பழைய மாணவர்கள் சந்திப்பு நடைபெற்றது. பல்வேறு துறைகளில் உயர்ந்த பதவிகளை வகித்த முன்னாள் மாணவர்கள் தங்கள் ஆசிரியர்களை சந்திக்க வந்தனர். அவர்களில் ஒருவர் மேடையில் பேசும்போது கூறினார்:

"என் வாழ்க்கையை மாற்றியது ஒரு பாடம் அல்ல; ஒரு ஆசிரியரின் நம்பிக்கை. 'உன்னால் முடியும்' என்று அவர் சொன்ன ஒரு வார்த்தை இன்று என்னை இந்த நிலைக்கு கொண்டு வந்துள்ளது."

அந்த வார்த்தைகளை கேட்ட ஆசிரியரின் கண்களில் மகிழ்ச்சிக் கண்ணீர் வழிந்தது. அப்போது அவர் உணர்ந்தார் – ஆசிரியரின் உண்மையான வெற்றி மதிப்பெண்களில் இல்லை; மாணவர்களின் வாழ்க்கையில் ஏற்படுத்தும் நல்ல மாற்றத்தில்தான் இருக்கிறது.

ஒரு ஆசிரியர் கற்பிக்கும் ஒவ்வொரு வகுப்பும், கூறும் ஒவ்வொரு நல்ல வார்த்தையும், அளிக்கும் ஒவ்வொரு ஊக்கமும், ஒரு மாணவனின் எதிர்காலத்தை உருவாக்கும் வலிமை கொண்டது. நாம் விதைக்கும் அறிவும், நற்பண்புகளும், நம்பிக்கையும் நாளை சமுதாயத்தை உருவாக்குகின்றன.

"ஒரு நல்ல ஆசிரியர் அறிவை மட்டும் கற்பிப்பதில்லை; தன்னம்பிக்கை, ஒழுக்கம், மனிதநேயம் ஆகியவற்றையும் மாணவர்களின் மனதில் விதைக்கிறார். அவர் ஏற்றும் அறிவுத் தீபம் தலைமுறைகள் முழுவதும் ஒளிர்ந்து கொண்டே இருக்கும்."

R. CHITRA
WORKSHOP INSTRUCTOR/ECE

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IoT-Integrated Leaf Analysis for Early plant Disease Detection in Agriculture using Hybrid Ensemble Models

1st Dileep Pulugu
Department of CSE
Malla Reddy College of Engineering
and Technology
Hyderabad, India
dileep.p505@gmail.com

2nd RV S Praveen
Department of Digital Engineering and
Assurance
Hyderabad, India
praveen.rvs@gmail.com

3rd Rajeeb Lochan Moharana
Department of Seed Science and
Technology
College of Agriculture
Kalahandi, India
rlmoharana@gmail.com

4th Meena Naga Raju
Department of ECE
SRM University
Vijayawada, India
nagarajumeena@gmail.com

5th P. Revathy
Department of Computer Science and
Engineering
Narsimha Reddy Engineering College
Hyderabad, India
revathy5813@gmail.com

6th K. Saravanan
Department of Electronics and
Communication Engineering
Sakthi Polytechnic College
Proddu, India
ks.asng@gmail.com

Abstract—Crop diseases threaten food security and agricultural production. For prompt interventions, disease management, and loss reduction, crop disease outbreaks must be detected early. Precision Agriculture (PA) promotes sustainable agriculture by developing predictive plant disease prevention technology using ICTs. This paper presents a multi-step illness detection system using contemporary sensors and images. System architecture includes preprocessing, feature extraction, model training, and disease detection. Crop conditions are monitored using temperature, colour, and humidity sensors. High-resolution (HR) picture preprocessing improves raw images for predictive analysis. Leaf pictures provide geometric characteristics including area, perimeter, and rectangularity to improve model correctness. Model Driven ERL trained a plant disease prediction model. Combining sensor data with machine learning algorithms in PA yielded 89.47% plant disease prediction accuracy. A scalable technique to early disease identification in agriculture makes this technology potential for proactive plant disease control. This model's precision makes it suitable for real-world PA systems, reducing disease-related crop losses and ensuring agricultural output sustainability.

Keywords—plant disease detection, ensemble deep reinforcement learning (ERL), temperature sensor plants

I. INTRODUCTION

Plant diseases cause massive financial losses for the agriculture industry globally. Precision agriculture relies on monitoring plant health and detecting pathogens to reduce disease transmission and enable effective management strategies. Better crop management and disease control could be achieved with the use of automated detection of plant diseases and other pressures on crops. Automatic plant disease detection approaches mainly fall into two categories: direct methods and indirect (proxy) methods[1]. Direct detection approaches, such as molecular and serological methods, allow for high-throughput analysis of several samples. These methods provide precise disease-pathogen link identification by naming the infectious agents directly responsible for disease. Viruses, fungi, and bacteria are frequent pathogens. Using these methods for sampling, processing, and analysis can add at least a few days to the process. By monitoring morphological changes, temperature, transpiration rate, and volatile organic chemical emissions from sick plants, certain

plant illnesses can be detected indirectly or with use of proxies.

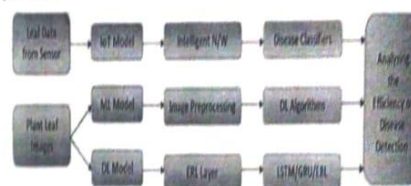


Fig. 1. Basic Architecture of Plant Disease in IoT

Each and every aspect of crop production must be carefully attended to if growers want to guarantee a greater yield all year round as shown in Figure 1. The soil, the seeds, and the main nutrient requirements of the crop are among the many things that need to be thought about. In order to make it through the day, people in all walks of life depend on the crops and other agricultural goods. But crop diseases are a major problem for agricultural output, as they are for any sector[2]. Agrarian production must take precedence due to the enormous need for food around the world. Before the yield hits the market, we want to make sure it doesn't lose anything. Many things, including diseases and natural disasters like droughts and earthquakes, can cause significant drops in agricultural yields. When it comes to quality, the fact that many plant diseases reduce yields is problematic. In plants, a disease is defined as any change that disrupts normal physiological processes[3]. Both the amount and quality of the harvest may be drastically reduced if these illnesses were to affect agricultural productivity. Managing a large quantity of agricultural products entails several time-sensitive responsibilities, such as keeping an eye out for illnesses that reduce it to undesirable materials.

Due to the universal importance of plants to human existence, plant care has become a global concern. Just like people, plants can be affected by a variety of diseases.[4] Pests and diseases in plants cost the food, fiber, and ornamental industries tens of billions of dollars every year. Mycoses are the underlying cause of a number of diseases. Conversely, further significant food and feed crop diseases are caused by

நிறைவுரை

"அறிவைத் தேடி, புதுமையைப் படைத்து, வெற்றியை நோக்கி தொடர்ந்து பயணிப்போம். இந்த செய்திமடல் உங்களுக்கு பயனுள்ளதாக இருந்திருக்கும் என நம்புகிறோம். அடுத்த இதழில் மீண்டும் சந்திப்போம். நன்றி!"

இறுதி கையொப்பம் (Newsletter Closing)

அன்புடன்,

ஆசிரியர் குழு (Editorial Board)

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