REPORT

PRAGATI ENGINEERING COLLEGE

(Approved by AICTE, Permanently Affiliated to JNTUK, KAKINADA & Accredited by NBA)

1-378, A.D.B.Road, Surampalem, Near Peddapuram-533437

"HARVEST AUTOMATION"

"HARVEST AUTOMATION"

Date: 22-8-2025

Day: Friday

Turing Club organised by the Dept. of CSE – AI&ML of Pragati Engineering College in association with Career Guidance Cell is organizing a seminar on "**HARVEST AUTOMATION**" as part of Industry 4.0.

Attendance list :

PRAGATI ENGINEERING COLLEGE

(AUTONOMOUS)

DEPARTMENT OF CSE (Artificial Intelligence & Machine Learning)

TURING CLUB

EVENT NAME: Harvest Automation

DATE: 22-8-2025

SPEAKER NAMES: M. Harshitha, K. Roshini, S. Swaroopa rani

The list of students attended for this event.

S.No	Roll No.	Name of the Student	Year	Signature
1.	24A31A42D0	G.K.V.Vishesh Varma	2nd	[signature]
2.	24A31A42C6	S. Simon	2nd	Simon
3	24A31A42C7	SVS Bhaskar	2nd	[signature]
4.	24A31A4285	I. Harsheeth	2nd	I. Harsheeth
5	24A31A42C2	R. Sandeep	2nd	R. Sandeep
6.	25A35A4210	Ch. Vivek	2nd	Ch. Vivek.
7.	24A31A42C0	P. Charan Sanjay	2nd	P. Charan Sanjay
8.	24A31A42A9	D. Sriram Varma	2nd	D. Sriram,
9.	24A31A42B1	D. Mukesh Kumar	2nd	D. Mukesh kumar
10.	24A31A42B6	K. Chaitanya Kumar	2nd	K. Chaitanya Kumar
11.	24A31A42D1	Sri. Gowtham Varma	2nd	Gowtham.
12.	25A35A4212	K. Vamsi teja	2nd	K. Vamsi Teja
13	24A31A42A4	A. Rohit vijay	2nd	A. Rohit vijay
14.	24A31A42A5	B. Pavan Santhosh	2nd	B. Pavan Santhosh
15.	24A31A42C8	Sk. Alisha	2nd	Sk. Alisha

Harshitha

Student coordinator

Faculty Coordinator

A. Radha Krishna

HoD-CSE (AI&ML)

PRAGATI ENGINEERING COLLEGE (A) SURAMPALEM ★ AI & ML HOD

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1	24A31A42G8	D. Bala Unashankar	II	Shankar
2	24A31A42I8	P. Srinivas	II	P. Srinivas.
3.	24A31A42H2	G. Joe Syam Kumar	II	G. Joe
4.	24A31A42H0	G. Shankar Sujith	II	G. Shankar Sujith.
5.	24A31A42J1	S. Bharadwaj	II	Bharadwaj.
6	24A31A42I5	N. Amaresh	II	N. Amaresh
7	24A31A42J4	S.V.S. Hara haran	II	S.V.S. Haraharan.
8.	24A31A4239	K. Jyothik pavan	II	K Jyothik pavan
9.	24A31A4252	P. Varun	II	P. Varun
10	24A31A4233	B.S.S.N.RAJU	II	
11	24A31A4236	G. Dheeraj Reddy	II	G. Dheeraj
12	24A31A4249	M. Dani Bony	II	M. Dany Bony
13	24A31A4256	S. Dan. S. Ramavel	II	
14	24A31A4253	P. H. C. Teja	II	P. H. C. Charanteja
15	24A31A4234	D. Hari Kishore	II	D. Hari Kishore

Harshitha
Student coordinator

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1.	24A31A4223	N. Gopika Nuchala	II	N. Gopika
2.	24A31A4207	CH. Sai Dharu shree	II	
3.	24A31A4206	Ch. Mary Blessica	II	
4.	24A31A4209	G. Hima Bindu	II	G. Bindu
5.	24A31A4227	P. Sai Rupasri	II	P. Sai Rupasri P.
6.	24A31A4230	V. yashoda	II	V. yash
7.	24A31A4284	K. Sai Satya Deepika	II	
8.	24A31A42A0	V.S.G.S. lakshmi	II	V. Lakshmi.
9.	24A31A4283	K. Bhuvana chandrika	II	K. Bhuvana
10	24A31A4270	E. Mano-Harika	II	E. Mano Harika
11	24A31A4299	T. Theshmaja	II	T. Theshmaja
12	24A31A4272	G. Bhavani Sai suma	II	G. B. Sai Suma.
13	24A31A4292	B. Bhargavi lakshmi	II	B. Bhargavi lakshmi
14	24A31A4268	B. Aparna	II	B. Aparna
15	24A31A4294	R. Amrutha.	II	R. Amrutha.

Harshitha
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1.	24A31A42D4	Ch. Padma Sai	II	
2.	24A31A42E9	M. Harshitha	II	M. Harshitha
3.	24A31A42G0	T. Prabhata Surya	II	T. Prabhata Surya
4.	24A31A42F6	R. Niharika	II	R. Niharika
5	24A31A42D6	D.H.V.D.V. Srujana	II	D. Srujana
6.	24A31A42D8	G. Isvarya	II	G. Isvarya
7.	24A31A42F8	S. Prasanna	II	S. Prasanna
8.	24A31A42F7	R Thanmai	II	
9.	25A35A42L4	K. Vyshnavi	II	K. Vyshnavi
10.	24A31A42E0	K Manatha	II	K Manatha
11.	24A31A4220	M.S.S.L. Nageswari	II	M. Nageswari
12.	24A31A4215	K. Divya Jyothi	II	K. Divya Jyothi
13	24A31A4205	B. Sai Soumya	II	
14.	24A31A4210	K.S.D. Lakshmi	II	K.S.D. Lakshmi
15.	24A31A4216	K. Sri Niharika	II	K.S. Niharika.

Harshitha
Student coordinator

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PRAGATI ENGINEERING COLLEGE
AI & ML HOD
SURAMPALEM

FEED BACK ANALYSIS

ID	NAME	ROLL NUMBER	YEAR	ABOUT THE SPEAKER	Technical content explanation	Any Suggestions
1	Sai Dhanushree chitturi	24A31A4207	2	4	3	
2	Padilam. Deepika Satya Jaya Durga	24A31A4225	2nd year	5	5(EXCELLENT)	No suggestions
3	J.Siri chandana	24A31A4210	2 nd year	4	4	None
4	Dammala Hari Kishore	24A31A4234	2nd	4	4	
5	P SRAVYA	24A31A42F3	AIML	5	5(EXCELLENT)	No
6	Mary Blessica	24A31A4206	2nd	5	5(EXCELLENT)	No suggestions
7	Vanumu Yashodalakshmi	24A31A4230	2	4	5(EXCELLENT)	No
8	Narisetty Gopika Nischala	24A31A4223	2	4	5(EXCELLENT)	None
9	Piradi. Sai RupaSri	24A31A4227	2	4	4	No
10	Pasala charishma	24A31A4226	2	5	5(EXCELLENT)	
11	K.PUJITHA	24A31A4217	2ND YEAR	5	5(EXCELLENT)	
12	Datla Sri Venkata Lakshmi Sowjanya	24A31A4208	2	5	5(EXCELLENT)	No suggestions
13	B.Sai Saranya	24A31A4205	2	5	5(EXCELLENT)	
14	K.Sri Niharika	24A31A4216	2nd	5	5(EXCELLENT)	
15	K Sowjanya Durga Lakshmi	24A31A4212	2	5	5(EXCELLENT)	
16	K.kanaka maha Lakshmi	24A31A42E3	2nd	4	3	No PROVIDE PRACTICLE
17	SK.mahaboob basha	24a31a42j3	2	4	5(EXCELLENT)	Intrested to do simple projects using this content
18	Duggana Dhanvy	24A31A42G9	2	4	5(EXCELLENT)	Good
19	Manohar vinnakoti	24a31a4265	2	4	5(EXCELLENT)	Communication...
20				1	5(EXCELLENT)	
21	M.SIVARAMAKRISHNA	24A31A42I3	2nd p	1	5(EXCELLENT)	
22	Kopparthy Gayatri Devi	24A31A42E2	2nd	5	5(EXCELLENT)	
23	G.Tualsi Hima Bindu	24A31A4209	2	5	4	Impressive
24	VARUN DODDIPATLA	24A31A4235	2025	4	5(EXCELLENT)	GOOD

Overall rating: **Good**

Harvesting Automation

Explore how cutting-edge robotics is revolutionising farming practices, enhancing efficiency, and promoting environmental sustainability.

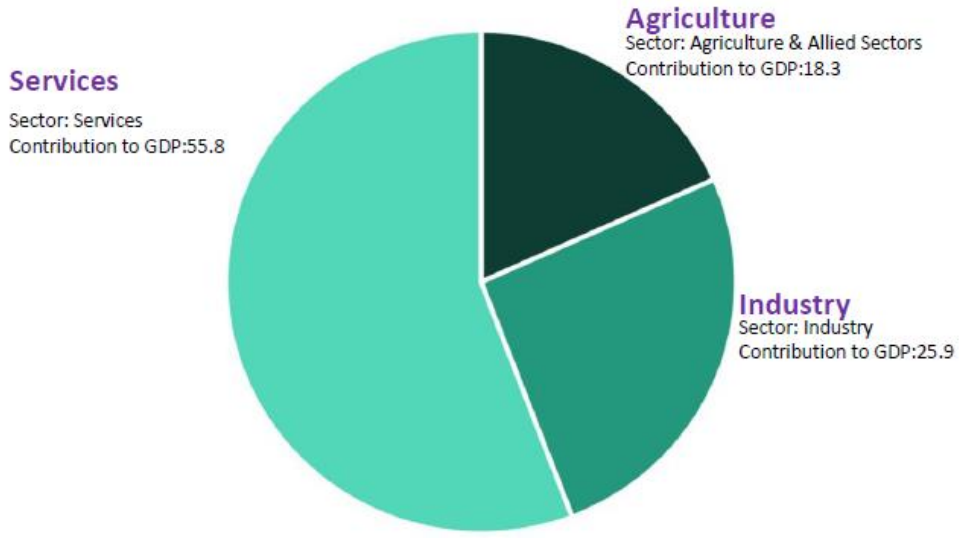
What is Harvesting Automation?

Advanced robotics for crop collection.

Harvesting automation utilizes **robots and intelligent systems** to perform tasks traditionally done by human labor.

This includes picking, sorting, and packing crops with enhanced speed and precision.

Snapshot of Indian Agriculture: Key Insights



Revolutionizing Indian Agriculture: A Robotic Renaissance

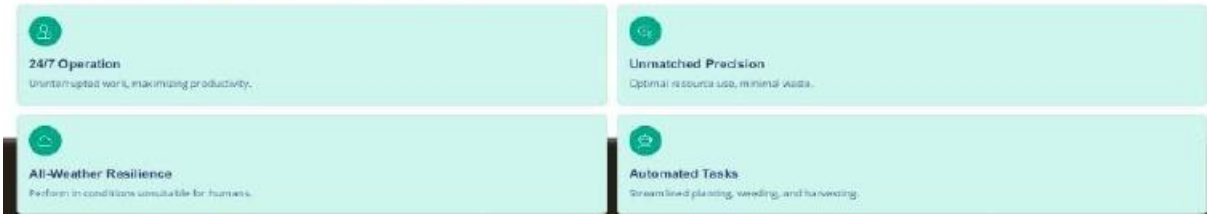
This presentation explores the current landscape of Indian agriculture, highlighting critical challenges and presenting innovative solutions through the integration of robotics and advanced technologies. We aim to demonstrate how these advancements can enhance productivity, minimize food waste, and ensure sustainable growth for the sector.

Robotics: The Future of Farming

AGRICULTURAL ROBOTS

- Offer a transformative solution to many of the challenges faced by traditional farming
- Operate continuously, 24/7, without fatigue or the need for breaks, significantly increasing efficiency and reducing operational timelines

For instance, in tasks like seeding, weeding, spraying, and harvesting, robots can execute with unparalleled accuracy, minimizing waste of seeds, water, and fertilizers, and ensuring uniform treatment across fields. This precision not only boosts productivity but also contributes to more sustainable farming practices, reducing environmental impact.



Types of Agricultural Robots

Diverse applications for diverse needs.

Drones

Crop monitoring, spraying, data collection.

Harvesting Robots

Automated picking of fruits and vegetables.

Autonomous Tractors

Plowing, planting, and cultivating without a driver.

Weeding Robots

Precision weeding, reducing herbicide use.

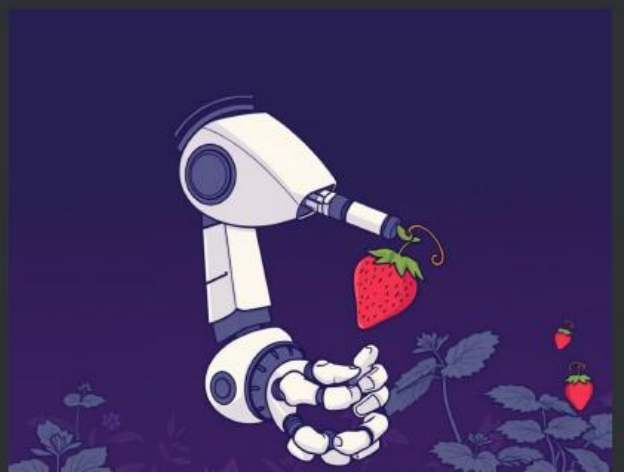
Multi-Crop Harvesting Robots: Precision & Productivity

Robots are transforming the harvesting of delicate crops, ensuring higher accuracy and reduced damage compared to manual methods.

Harvest CROO (Strawberries)
Designed to gently pick ripe strawberries, improving yield and reducing fruit damage by up to 20%.

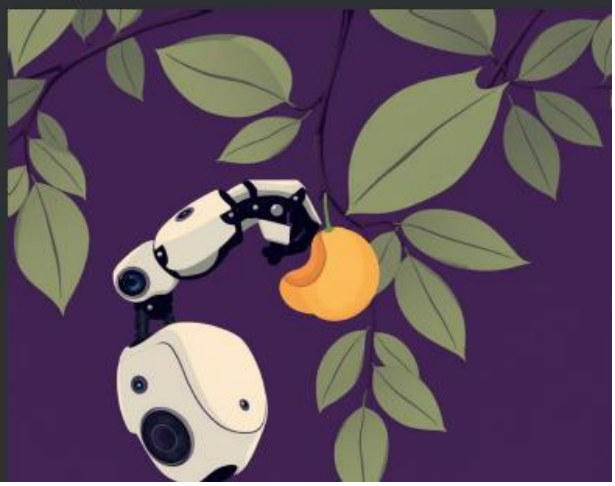
Vegebot (Lettuce)
Utilises advanced sensors and AI to identify and carefully harvest lettuce, adapting to varying conditions.

FFRobotics (Fruits)
Specialises in picking a variety of fruits, achieving up to 98% accuracy and significantly faster harvest cycles.



Case Study: Cashew Nut Plucking Robots

- Cashew harvesting is notoriously labour-intensive and requires delicate handling to avoid damaging the nuts.
- Traditional methods expose workers to harsh conditions and potential hazards.
- Robotics offers a groundbreaking solution to these challenges.
- New autonomous cashew plucking robots utilize advanced AI-powered vision systems to identify ripe cashew nuts on trees precisely.
- These robots, whether ground-based or drone-mounted, gently pluck the nuts, significantly reducing the need for human exposure to harsh weather and potential irritants from the cashew sap.
- This precision not only protects workers but also dramatically increases overall yield and reduces crop waste.



The Foundation of Our World: Agriculture

Agriculture is the backbone of civilization, providing sustenance and livelihood across the globe. Farmers, with their unwavering dedication, feed billions, making their work the bedrock of our society.

Manual Harvesting: The Hidden Costs

- **Labor-intensive & Costly:** High wages and significant manual effort drive up production costs.
- **Physically Demanding:** Repetitive tasks lead to fatigue and injuries for farmworkers.
- **Inconsistent Ripeness:** Subjective judgment causes variations in harvest quality.
- **Quality Control Issues:** Difficulty in maintaining uniform standards for freshness and appearance.

Understanding Agricultural Pesticides

Pesticides are chemicals used to control pests that can harm crops. Their widespread adoption has significantly impacted agricultural practices.

80%

Farmers Using Pesticides

A large majority of farmers currently rely on pesticides to protect their yields.

20%

Farmers Avoiding Pesticides

A smaller segment of agriculture opts for organic or alternative pest control methods.

1 **Insecticides**
Target insects that damage crops.

2 **Herbicides**
Control unwanted weeds that compete with crops.

3 **Fungicides**
Prevent and control fungal diseases.

4 **Rodenticides**
Eliminate rodents like rats and mice.

5 **Bactericides**

Health Risks from Pesticides

Neurological Impairment
Exposure linked to cognitive decline and increased risk of Parkinson's disease.

Reproductive Issues
Can disrupt hormonal balance, leading to fertility problems and birth defects.

Cancer Risk
Certain pesticides are classified as probable human carcinogens.

Immune System Suppression
Weakens the body's defenses, making individuals more susceptible to illness.

Why AI is Better than humans for Fruit Harvesting

Artificial Intelligence provides a natural and chemical-free way of identifying fruit ripeness, ensuring safe and healthy produce for consumers. Unlike human judgment, which can be inconsistent, AI offers accurate and consistent results by analyzing color, size, and texture. It is much faster than manual checking and can easily scale across large farms, helping farmers save time, reduce wastage, and deliver high-quality fruits to the market.

Most Useful Object Detection Models for Fruits

YOLO (v5–v8)

Fast, lightweight, and ideal for real-time fruit detection in farms.

Faster R-CNN

Highly accurate, perfect for detailed fruit quality checks in markets.

SSD (Single Shot Detector)

Offers a good balance of speed and accuracy, suitable for mid-scale farms.

Mask R-CNN

Detects and segments overlapping fruits with precision, useful when fruits cluster on trees.

Visualizing AI detection of fruit ripeness.

YOLO – Real-Time Object Detection

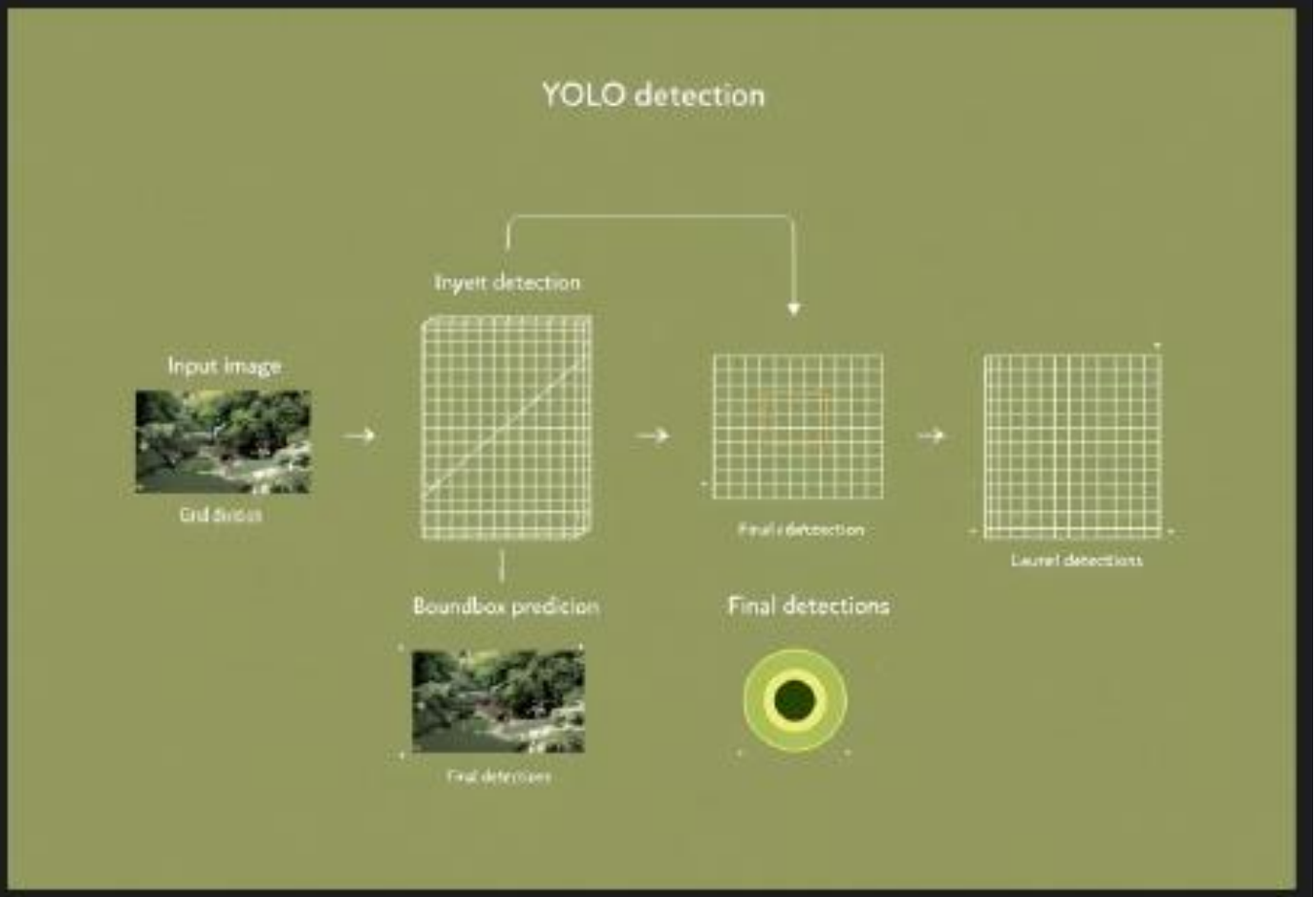
YOLO, standing for **Y**ou **O**nly **L**ook **O**nce, is a revolutionary object detection system that processes entire images in a single forward pass. It's known for its exceptional speed, making it ideal for real-time applications like fruit detection in dynamic environments.

Input Image | **Grid Division** | **Bounding Boxes** | **Class Probabilities** | **Confidence Scores**

This single-stage approach divides the image into a grid, with each cell simultaneously predicting bounding boxes, class probabilities, and confidence scores for detected objects, leading to incredibly fast and efficient performance.

YOLO — Single-stage, real-time object detection

You Only Look Once (YOLO) represents a paradigm shift in object detection. Unlike multi-stage approaches, YOLO detects all objects within an image in a single, streamlined pass through a convolutional neural network (CNN), leading to unparalleled speed.



How it works (Inference)

Grid Division

The input image is first divided into a fixed grid of cells.

Cell Predictions

Each grid cell is responsible for predicting bounding box coordinates (x, y, width, height), an objectness score (confidence of containing an object), and class probabilities for objects within that cell.

Non-Maximum Suppression (NMS)

Redundant or overlapping bounding boxes are then filtered out using NMS, resulting in a single, accurate detection for each object, such as ripe, unripe, or overripe fruits.

Affordable AI & Future Scope in Fruit Industry

Making AI Affordable for Farmers

Technology Costs Drop Over Time

Just like mobiles and internet, AI tools will become cheaper as adoption grows.

Subscription Models

Low-cost access to powerful AI models via cloud services.

Affordable Devices

Lightweight models like YOLOv5 can run on smartphones, not just supercomputers.

Future Scope of AI

Automated Harvesting

→ Robots or machines will pick ripe fruits automatically instead of laborers.
(Example: A robot arm plucking only ripe mangoes.)

Predictive Yields

→ AI will tell farmers in advance how much fruit they can expect in the next harvest.
(Example: Knowing "this season you'll get ~500 kg of apples".)

Driving Growth in Agriculture: AI-Powered Fruit Detection

Our intelligent systems revolutionize fruit harvesting, bringing unprecedented efficiency, quality, and economic benefits to growers and consumers alike.

Health, Safety & Quality

- Chemical-free fruits
- Consistent grading
- Reduced food waste

Trust & Brand Value

- Proof of ripeness
- Transparent grading
- Premium branding

Speed & Scale

- Hundreds scanned per minute
- 24/7 operation
- Access difficult areas

Farmer & Market Economics

- Lower labor costs
- Reduced spoilage
- Better market prices

PHOTOS


Department of CSE(Artificial Intelligence & Machine Learning)
Organises
Seminar on
IAENG
HARVEST AUTOMATION
Speakers
S. Swaroopa rani
23A31A42J6
M. Harshitha
23A31A4216
K. Roshini
23A31A4208
22th August 2025
Timings : 11:00 AM - 12:00 PM
In Association with IAENG (International Association of engineers & Turing club)
Pragati Engineering College
(AUTONOMOUS)


GPS Map Camera
Surampalem, Andhra Pradesh, India
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GPS Map Camera
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22/08/2025 01:46 PM GMT +05:30
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Surampalem, Andhra Pradesh, India
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PRAGATI ENGINEERING COLLEGE

(AUTONOMOUS)

DEPARTMENT OF CSE (Artificial Intelligence & Machine Learning)

PEC / Admin / Circular / 2025 / Turing CLUB

Date: 20- 8-2025

All the staff, Pragati Turing club coordinators, Third year Students are informed that a seminar on **"HARVEST AUTOMATION"** is being organized by Turing club & IAENG in association with career Guidance cell. The details are given below.

Date: 22-08-2025
Time: I1:00 AM to 12:00 PM
Venue: F2
Faculty Co-Ordinator: Mrs. L. Yamuna

Student Co-Ordinator: M. HARSHITHA (III-year CSE (AI&ML)-23A31A4216)

Speaker: S. SWAROOPARANI (III -year CSE (AI&ML)-23A31A42J6)
K. ROSHINI (III-year CSE (AI&ML)-23A31A4208)
M. HARSHITHA (III-year CSE (AI&ML)-23A31A4216)

Faculty coordinator **HoD-CSE (AI&ML)**

Copy to:

1) Chairman /All Directors / Vice President for kind information.
2) Vice Principal/Dean T&P for information.
3) All HoDs are requested to circulate among your staff members.
4) Convener-Career Guidance cell
5) Office File.