



AISSMS

INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)

ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING



TECHNICAL MAGAZINE 2025-2026





AISSMS

INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Vision

- To be known for imparting quality education in computer engineering to serve the changing needs of global industry.

Mission

- To create an environment that fosters technical and professional growth to make graduates globally competent.
- To develop industry ready professionals, researchers, and entrepreneurs to solve real world problems and societal issues.

Program Education Objectives(PEOs)

- **PEO1:** Work productively as successful computer professionals / entrepreneurs / researchers in global industry.
- **PEO2:** Adapt latest technological skills to face challenges of the modern computing industry.
- **PEO3:** Work in finance, healthcare, security and banking sectors as a team member or a leader with ethical values.

Program Specific Outcomes (PSOs)

PSO1 Problem Solving and Programming Skills: Problem Solving and Programming Skills: Graduates will be able to apply knowledge of procedural or object oriented programming to solve computing problems

PSO2 Professional Skills: Graduates will be able to design and develop software systems using front end and back end technologies by following standard software engineering principles.

PSO3 Professional Skills: Graduates will be able to analyse the algorithms and implement optimized solutions in the domain of machine learning, natural language processing, security, cloud computing and Internet of Things.



AISSMS

INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Program Outcomes (POs)

Graduates will be able to

PO1: Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

PO6: The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

PO8: Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

PO9: Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

PO10: Project Management and Finance: Apply knowledge and understanding of



AISSMS

INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognize the need for, and have the preparation and ability for

- i) independent and life-long learning
- ii) adaptability to new and emerging technologies and
- iii) critical thinking in the broadest context of technological change. (WK8)



AISSMS

INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Knowledge and Attitude Profile (WK)

WK1: A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.

WK2: Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.

WK3: A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.

WK4: Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.

WK5: Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.

WK6: Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.

WK7: Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.

WK8: Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.

WK9: Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.



AISSMS

**INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Editorial Team



Faculty Coordinator : P.S.Jadhav

I am pleased to extend an invitation to you for the technical magazine 2025-26 of our department. I consider the technical magazine to be an excellent opportunity to concentrate on the projects, sponsored projects, paper publication, Internship & design patents of students and it is beneficial further for their education. Through the projects they undertake, students have the opportunity and platform to showcase their skills, which is beneficial to everyone in enhancing their technical knowledge. I believe that this magazine fulfills its purpose



Student Coordinator: Atharva Mandlik (SY BTECH DIV-B)



AISSMS
INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Objective behind Technical Magazine

It is a privilege for the Department of Computer Engineering to present the technical magazine for the years 2025–2026. We have compiled project titles, publications, Internship, design patents from our students. Our aim in sharing this information is to motivate students and educate them about the current demands in the IT industry.

The department strives to enhance the technical skills of its students. This initiative has been in progress since their second year. In addition to classroom instruction, the department arranges various expert lectures, seminars, field trips, and educational resources for students. There are scheduled activities designed to inform students about the existing needs of the IT sector. The outcomes of these initiatives are reflected in their successful placements and admissions to advanced studies.

Coordinator

Mrs.P.S.Jadhav

HOD

Dr. K.S.Wagh



AISSMS

INSTITUTE OF INFORMATION TECHNOLOGY
(I.O.I.T)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Index

Sr. No.	Content	Page No.
I.	PLACEMENT OF ACADEMIC YEAR 2025-26	1
II.	PROJECT TITLES OF BTECH FINAL YEAR ACADEMIC YEAR 2025-26	4
III.	SPONSORED PROJECT LIST OF BTECH FINAL YEAR ACADEMIC YEAR 2025-26	11
IV.	BTECH FINAL YEAR PAPER PUBLICATION DETAILS OF ACADEMIC YEAR 2025-26	14
V.	INTERNSHIP DETAILS OF BTECH FINAL YEAR ACADEMIC YEAR 2025-26	19
VI.	TY BTECH PATENT DETAILS 2025-26	22
VII.	GLIMSES OF SPONSORED PROJECTS 2025-26	25



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

I. PLACEMENT OF ACADEMIC YEAR 2025-26

Sr No	Student Name	Company
1	Atharva Uttam Pedgulwar	Onix Datametica Solutions Pvt. Ltd
2	Soham Satish Kulkarni	Onix Datametica Solutions Pvt. Ltd
3	Udayan Sangramsingh Taware	Smart Analytica
4	Prajwal Sunil Dalvi	Microlise Telematics Pvt. Ltd
5	Pavankumar Sainath Kalyane	Edu-VersITY
6	Harshad Dada Chavan	Edu-VersITY
7	Pranav Patil	Edu-VersITY
8	Rutuja Dattatray Chaskar	Edu-VersITY
9	Ganesh Santosh Waje	Edu-VersITY
10	Soham Santosh Amne	Intervision Technology Pvt. Ltd
11	Akanksha Vikram Patil	Airtel
12	Shivansh PandITa	Cognizant
13	Shloka Vishwaraj Pharande	Cognizant
14	Vaishnavi Bhagwat Borse	Cognizant
15	Siddhant Vinod Wasekar	Cognizant
16	Aishwarya Satyen Mutha	Cognizant
17	Shivam Kundansing Rajput	Cognizant
18	Avdhoot Ambadas Chavan	Cognizant
19	Manthan Balu Kachare	Cognizant
20	Om Arun Mali	Cognizant
21	Aryan Prabhakar Shinde	Cognizant
22	Sahil Ananda Mhatugade	Cognizant
23	Siddhi Sunil Kadam	Cognizant
24	Sanskar Hadole	Cognizant
25	Shashwati Purushottam Kulkarni	Infosys
26	Mrunal Umeshkumar Tayde	Infosys
27	Pooja Santosh Thorat	Infosys
28	Omkar Maruti Jaykar	Cognizant
29	Pranav Bhagwan Gonde Patil	Comprinno Technologies
30	VinIT Vilas Desai	Entrata
31	Pratik Rajesh Chemate	Onix Datametica Solutions Pvt. Ltd
32	Prajyot Sanjay Jagtap	Thynk Technology India
33	Karan Maruti Bhosale	Thynk Technology India
34	HITesh Chandrashekhar Bhosale	Thynk Technology India



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

35	Anish Anil Shinde	Thynk Technology India
36	MohIT Sanjay Wagh	Thynk Technology India
37	Parv JITesh Shah	Thynk Technology India
38	Abhidnya Pravin Khalane	Thynk Technology India
39	Sarthak Annasaheb Nage	Thynk Technology India
40	Piyush Pravin Bhamare	HevoData
41	Sakshee Satish Yande	HevoData
42	Suhani Suresh Rao Korde	HevoData
43	Anushka Kalpund	Tulapi.ai (A Datafortune company)
44	Devang Ajay Gandhi	Tulapi.ai (A Datafortune company)
45	Om Salunkhe	Tulapi.ai (A Datafortune company)
46	Shruti Surendra Deokule	Thynk Technology India
47	Krishna Tirupati Polaswar	Thynk Technology India
48	Neel Manik Sawant	Thynk Technology India
49	Maurya Ashwin Rameshchandra	DEEL EOR PRIVATE LIMITED
50	Ingale Jayesh Prakash	Rudder analytics
51	Suha Mujeeb Karjatkar	Qspider
52	Amne Soham Santosh	Qspider
53	Ghuge AdITi Ramesh	Qspider
54	Adgurwar Anshul Rajesh	Qspider
55	Patil Manas Deepak	Qspider
56	Dhumal Yash Deepak	LTIMindtree
57	Ayush Shailendra Jagtap	LTIMindtree
58	Suryawanshi Sujal Ganesh	LTIMindtree
59	Arjun Vaishnavi Arvind	LTIMindtree
60	Masal Siddhesh Prashant	LTIMindtree
61	Kulkarni Sameer Pratik	LTIMindtree
62	Soni Saumya Anurag Kamal	QSpider
63	Deshmukh Atharva Dhanaji	QSpider
64	Wajage Apurva Rajesh	Accenture
65	Jadhav Sakshi Mahendra	Onix-Datametia Solutions Pvt Ltd
66	M Venkata Soodarshan	Onix-Datametia Solutions Pvt Ltd
67	Shendage Komal Santosh	Zensar technologies
68	Chate Ganesh Dnyanoba	Primus Techsystems
69	Arsalan Irfan Shaikh	Knorr-Bremse Technology Center India (KBTCI), Pune
70	Safai Shivangi Makarand	Onix-Datametia Solutions Pvt Ltd



AISSMS **INSTITUTE OF INFORMATION TECHNOLOGY** **(IOIT)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

71	Soham Deepak Mistry	SCOREAZY
72	Ramdasi Hrushikesh Hemkantrao	TCS
73	Chavan Sushant Parmeshwar	Smart Analytica



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

II. PROJECT LIST OF ACADEMIC YEAR 2025-26

BTECH FINAL YEAR PROJECT DETAILS (DIV-A)

Group No/ Group ID	Project Group Member Full Name	Title of Project	Name of Guide
1	Yash Divekar	AI-Based Educational Innovation for Quality Learning: The Study-Point Approach	Dr. Sarika N. Zaware
	Sameer Kulkarni		
	Ayush Bhujbal		
	Aditya Kokate		
2	Rakshit S Badiger	AI-Powered Recruitment Portal	Dr. N. S. Patil
	Sakshi V Kadam		
	Anshul Adgurwar		
3	Devang Gandhi	Temp Guard: Offline Temperature Monitoring & Reporting System	Dr. S. B. Toney
	Avdhoot Chavan		
	Suha Karjatkar		
	Jayesh Ingale		
4	Pavankumar Kalyane	Precise AI – An Financial Data Analysis Using RAG	Mr. P. S. Sadaphule
	Ayush Jagtap		
	Omkar Jaykar		
5	Sushant Chavan	Social Media Analytics Dashboard for Brands	Ms. A. S. Varal
	Harshad Chavan		
	Diya Jain		
	Prajyot Jagtap		
6	Manthan Kachare	AI Driven Tools Management System	Dr. Sarika N. Zaware
	Shashwati Kulkarni		



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

	Yadnya Kimbahune		
	Abhidnya Khalane		
7	Anish Shinde	AI Interview System with Resume Analysis and Real-Time Voice Interaction	Mrs. Farhana Kazi Sayed
	Sujal Suryawanshi		
	Rohit Kashid		
8	Rutuja Chaskar	(Sanjivani Travels Integrated by AI and ML) AI-Powered Travel Booking and Cab Management System	Dr. Sarika N. Zaware
	Shubham Bhos		
	Ganesh Waje		
9	Suhani Korde	A multimodular mental health support system	Dr.M. P. Nerkar
	Shruti Deokule		
	Dipti Kause		
10	Ashish Fatke	Retail Vision Analytics Using YOLOv8 for Intelligent Store	Dr. S. P. Pimpalkar
	Yash Garud		
	Aditi Ghuge		
11	Prajwal Dalvi	AI-powered Attention Monitoring with Live Computer Vision Processing	Dr. K. S. Wagh
	Yash Dhumal		
	Anurag Kawade		
12	Harshal Dhumse	Real-time Fake News Detector	Mrs. P. S. Jadhav
	Soham Amne		
13	Manali Gawade	ContentIntelPy:Content Intelligence Python Library	Dr. S. P. Pimpalkar
	Atharv Deshmukh		
	Ronit Fulari		
14	Chaitanyaa Kashid	DeepFace: A Deep Learning Framework for Face Recognition and Matching	Dr. Chetan N. Aher
	Abhilasha Chavan		



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

	Sucheta Chaudhari		
15	Vaishnavi Borse	Transformation of Educational Videos into Structured Learning Modules via Retrieval Augmented Generation	Dr. S. P. Pimpalkar
	Shruti Chaudhari		
	Vaishnavi Arjun		
16	Ganesh Chate	PhysioAI : An Intelligent Real-Time Physiotherapy Monitoring and Audio Communication System	Dr. K. S. Wagh
	Karan Bhosale		
	Hitesh Bhosale		
17	Jairaj Chaunda	Gastroscan : Gastric cancer detection system using CT scan images	Mr. S. R. Pawar
	Harsh Bhandare		
	Sairaj Bhagat		
18	Toshita Bhagwate	Ask.Your.Trash (AI-based Smart Bin)	Dr. A. G. Said
	Yoshita Bardhe		
	Aishwarya Mutha		
19	Ayush Sharma	Neural Enhanced Hybrid Learned Index	Dr. K. S. Wagh
	Piyush Bhamare		
	Arya Arankalle		
20	Roshan Nikam	Dairy Delights : End to End Dairy product ordering and Inventory Management system	Dr. Chetan N. Aher
	Parv Shah		
	Swaraj Kawade		
21	Aditya Jedhe	Crowd Detection System	Dr. Veena S. Bhende
	Rajdeep Jagtap		



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

BTECH FINAL YEAR PROJECT DETAILS (DIV-B)

Group No/ Group ID	Project Group Member Full Name	Title of Project	Name of Guide
1	M. Venkata Soodarshan	AI Based potholes detection and Severity classification.(Road Safety)	Dr. Chetan N Aher
	Ketan Ganesh Nibandhe		
	Vaibhav S. Nagawade		
2	Sakshi Jadhav	Identification of Non-Proliferative Diabetics Retinopathy Stages Detection using Deep Learning	Dr. Kishor S Wagh
	Anushka Kalpund		
	Pratik Chemate		
3	Soham Kulkarni	AI-Native LMS	Dr. Archana G Said
	Pranav Gonde Patil		
	Ashwin Maurya		
4	Soham Mistry	JeevanYaan - An AI Powered Career & Wellness Companion	Dr. Minal P Nerkar
	Varad More		
	Atharva Pedgulwar		
5	Udayan Taware	OMNIVIEW- AI powered system for disaster management and defence strategy	Dr. Shilpa P Pimpalkar
	Vinit Desai		
	Mayank Wanare		
	Shivam Rajput		



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

6	Neel Sawant	AI-Powered Complaint Classification with Chatbot Assistance for MNGL	Dr. Sarika N Zaware
	Altaf Tamboli		
	Siddhant Wasekar		
7	Harsh Meshram	CowNet – A Smart Collaborative Dairy Cattle Management System using MERN and AI	Mrs. Prashant S. Sadaphule
	Arsalan Shaikh		
	Vineet Singh		
8	Krishna Polaswar	TruthLens: A Multi-Modal AI Framework for Deception Detection	Dr. Kishor S Wagh
	Isha Sonawane		
	Mohit Wagh		
9	Mrunal Tayde	DermaAI - AI based approach for facial acne detection and skincare product recommendation	Dr. Archana G Said
	Shloka Pharande		
	Pranjali Rathod		
10	Megha Narwade	EmoAid -AI based mental health analyser	Dr.V.S.Bhende
	Diksha Patil		
	Akanksha Patil		
11	Shashank Patil	Hybrid Transformer-Based Framework for Automated Essay Evaluation	Dr. Minal P Nerkar
	Swarupsinh Patil		
	Padmaraj Patil		
12	Soham Borhade	ExpenseIQ: A Smart AI Expense Manager	Dr. Minal P Nerkar
	Aary Shivalkar		



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

	Shivansh Pandita		
13	Shivangi Safai	Sketch-to-Face: AI-Powered Forensic Face Identification	Dr.N.S.Patil
	Anjali Pokale		
	Om Salunkhe		
14	Sahil Shilimkar	TrafficIntell- AI-Driven Urban Traffic Intelligence using DeepSORT and Machine Learning	Dr.G.J.Navale
	Soham Rautmare		
	Yuvaraj Poojary		
15	Smith Mavli	AI Content Architect - End-to-End AI Influencer Toolkit	Dr. Chetan N Aher
	Devendra Veer		
	Sarthak Waykar		
16	Siddhesh Masal	Public News Droid : Using ML to detect fake news	Mrs. Poonam S Jadhav
	Om Mali		
	Sahil Mhatugade		
17	Nandini Manvar	Intelligent Classroom Assistant: Real-Time Lecture Processing and Summarization Using AI and Cloud Services	Dr. Shraddha B Toney
	Gayatri Zagade		
	Gayatri Waghmare		
18	Apurva Wajage	AI-Powered Paper Trading Platform	Mrs. Anuradha S Varal
	Jayesh Varunkar		
	Srushti Waghmare		
19	Harshal Shete	EmpathVision : A Real-Time AI Model for Sign	Dr. Archana G Said



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

	Shrutika Yelgunde	Language to Speech Translation, Scene Description, and Emotion Recognition Using Machine Learning	
	Sakshee Yande		
	Rajesh Tekawade		
20	Pranav Divekar	Automated Property & Risk Assessment System for Maharashtra	Mr Prashant S Sadaphule
	Vedant Dongare		
	Komal Shendage		
	Siddhi Kadam		
21	Sarthak Nage	SpokenEdge: An integrated platform for improving speaking experiences using ML Models and Ai Algorithms.	Dr.N.S.Patil
	Pritam Mundhe		
22	Saumya Soni	SensAI- Intelligent Career Coaching System for Resume Optimization and Employability Enhancement	Dr.G.J.Navale
	Shreyash Trimale		
	Mayur Sapate		
23	Manas Patil	MedAI: Intelligent Disease Predictor and Health Guide	Dr. Chetan N Aher
	Virag Lokhande		
24	Pooja Thorat	WeSee – A Helper for the Visually Impaired	Dr. Shraddha B Toney
	Rutik Tupe		
	Sarthak Velapure		
25	Tanmay Patil	Deep Learning-Based Leaf Segmentation and Disease Classification	Mrs. Shilpa P Pimpalkar
	Pratham Phadtare		
	Aryan Shinde		



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

III. SPONSORED PROJECT LIST OF BTECH FINAL YEAR ACADEMIC YEAR 2025-26

Sr. No	Name of the Company	Student Name
1	BatchMatez Tech	Yash Divekar
		Sameer Kulkarni
		Ayush Bhujbal
		Aditya Kokate
2	Vita Solutions	Rakshit S Badiger
		Sakshi V Kadam
		Anshul Adgurwar
3	Pratyag Technocart Pvt. Ltd.	Devang Gandhi
		Avdhoot Chavan
		Suha Karjatkar
		Jayesh Ingale
4	Skoda Pvt Ltd.	Manthan Kachare
		Shashwati Kulkarni
		Yadnya Kimbahune
		Abhidnya Khalane
5	XMEGA Technologies, Nashik Maharashtra	Anish Shinde
		Sujal Suryawanshi



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

		Rohit Kashid
6	Sanjivani	Rutuja Chaskar
		Shubham Bhos
		Ganesh Waje
7	TRUMPF, Hinjawadi Phase II, Rajiv Gandhi Infotech Park, Pimpri-Chinchwad, Maharashtra 411057	Chaitanyaa Kashid
		Abhilasha Chavan
		Sucheta Chaudhari
8	Shriman Ecocycle Pvt Ltd	Toshita Bhagwate
		Yoshita Bardhe
		Aishwarya Mutha
9	HRUTA IT SOLUTIONS	Roshan Nikam
		Parv Shah
		Swaraj Kawade
10	ISRO	Udayan Sangramsingh Taware
		Vinit Desai
		Mayank Wanare
		Shivam Rajput
11	Maharashtra Natural Gas Ltd., Pune	Neel Manik Sawant
		Altaf Firoz Tamboli
		Siddhant Vinod Wasekar



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

12	Shree Ganesh Engineering	Sahil Shilimkar
		Soham Rautmare
		Yuvaraj Poojary
13	Coppercut Electrosoft Private Limited	Harshal Shete
		Shrutika Yelgunde
		Sakshee Yande
		Rajesh Tekawade
14	ProAzure Software Solutions Pvt. Ltd., Pune	Harshad Chavan
		Sushant Chavan
		Prajyot Jagtap
		Diya Jain
15	ProAzure Software Solutions Pvt. Ltd., Pune	Apurva Wajage
		Jayesh Varunkar
		Srushti Waghmare



IV. BTECH PAPER PUBLICATION DETAILS OF ACADEMIC YEAR 2025-26

BTECH FINAL YEAR PAPER PUBLICATION DETAILS (DIV-A)

Sr No	Guide Name	Group Member Name	Paper Title
1	Dr.S.N.Zaware	Yash Divekar	EduRAG: A Confidence-Weighted GraphRAG Framework for Multi-Hop Educational Question Answering
		Sameer Kulkarni	
		Ayush Bhujbal	
		Aditya Kokate	
2	Dr. Shraddha B Toney	Devang Gandhi	TempGuard: Real-Time Temperature Profiling System for Laboratory Chambers using Arduino and Desktop Interface
		Avdhoot Chavan	
		Suha Karjatkar	
		Jayesh Ingale	
3	Mr. P. S. Sadaphule	Pavankumar Kalyane	Precise AI- Privacy-Preserving Retrieval-Augmented Generation (RAG) Workflow for Financial Data Analysis
		Ayush Jagtap	
		Omkar Jaykar	
4	Mrs. Anuradha S Varal	Sushant Chavan	Social Media Analytics for Brands: Insights, Techniques, and Business Impact
		Harshad Chavan	
		Diya Jain	
		Prajyot Jagtap	
5	Dr. Sarika N Zaware	Manthan Kachare	A Role-Based Tools Management System for Secure and Controlled Industrial Operations
		Shashwati Kulkarni	
		Yadnya Kimbahune	
		Abhidnya Khalane	
6	Mrs. Farhana Kazi Sayed	Anish Shinde	AI Interview System: Adaptive Mock Interview Platform with LLMs and Voice
		Sujal Suryawanshi	
		Rohit Kashid	
7	Dr. Sarika N Zaware	Rutuja Chaskar	An AI-Driven Corporate Cab Management and Route Optimization System
		Shubham Bhos	
		Ganesh Waje	
		Yash Garud	
		Aditi Ghuge	
Yash Dhumal			



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

		Anurag Kawade	
8	Mrs. Poonam S Jadhav	Harshal Dhumse Soham Amne Shruti Chaudhari Vaishnavi Arjun	Comparing Real-Time Machine Learning Models for Detecting Fake News: An Explainable AI Perspective
9	Dr. Archana G Said	Toshita Bhagwate Yoshita Bardhe Aishwarya Mutha Parv Shah Swaraj Kawade	Ask Your Trash: A Smart Bin System for Waste Segregation and Tracking



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

BTECH FINAL YEAR PAPER PUBLICATION DETAILS (DIV-B)

Sr No	Guide Name	Group Member Name	Paper Title
1	Dr. Chetan N Aher	M. Venkata Soodarshan	AI-Driven Road Safety Monitoring and Civic Issue Reporting System Using Computer Vision
		Ketan Ganesh Nibandhe	
		Vaibhav S. Nagawade	
2	Dr. Archana G Said	Soham Kulkarni	AI-Native LMS: Home schooling for Adaptive and Multilingual Education in India
		Pranav Gonde Patil	
		Ashwin Maurya	
3	Dr. Minal P Nerkar	Soham Mistry	JeevanYaan - An AI Powered Career and Wellness Companion
		Varad More	
		Atharva Pedgulwar	
4	Dr. Shilpa P Pimpalkar	Udayan Taware	Satellite Imagery and Deep Learning: A Novel Approach to Landslide Detection
		Vinit Desai	
		Mayank Wanare	
		Shivam Rajput	
5	Dr. Sarika N Zaware	Neel Sawant	DistilBERT for Automated Complaint Classification of Financial Institutions
		Altaf Tamboli	
		Siddhant Wasekar	



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

6	Mr.Prashant S.Sadaphule	Harsh Meshram	Overcoming Class Imbalance: The Critical Role of Oversampling in Machine Learning-Based Calving Prediction for Dairy Cattle
		Arsalan Shaikh	
		Vineet Singh	
7	Dr. Kishor S Wagh	Krishna Polaswar	A Confidence-Weighted Multi-modal Framework for Explainable Deepfake Detection Across Text, Audio, Image & Video Data
		Isha Sonawane	
		Mohit Wagh	
8	Dr. Archana G Said	Mrunal Tayde	DermaAI - AI based approach for facial acne detection and skincare product recommendation
		Shloka Pharande	
		Pranjali Rathod	
9	Dr.V.S.Bhende	Megha Narwade	Multimodal Chatbot-Assisted System for Emotion and Stress Screening using Computer Vision and NLP
		Diksha Patil	
		Akanksha Patil	
10	Dr.N.S.Patil	Shivangi Safai	From Strokes to Identity: A Hybrid Deep Learning Framework for Forensic Sketch Recognition
		Anjali Pokale	
		Om Salunkhe	
11	Dr.G.J.Navale	Sahil Shilimkar	TrafficIntell: AI-Driven Urban Traffic Intelligence using DeepSORT and Machine Learning
		Soham Rautmare	
		Yuvaraj Poojary	
12	Mrs. Poonam S Jadhav	Siddhesh Masal	Fake News Detection Using a DeBERTa-Based Transformer on ISOT and WELFake Datasets
		Om Mali	



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

		Sahil Mhatugade	
13	Dr. Shraddha B Toney	Nandini Manvar	AI-Powered Classroom Notes Recorder: Real-Time Transcription, Summarization, and Translation
		Gayatri Zagade	
		Gayatri Waghmare	
14	Mrs. Anuradha S Varal	Apurva Wajage	An Explainable AI-Enhanced Sentiment-Driven Framework for Paper Trading Systems
		Jayesh Varunkar	
		Srushti Waghmare	
15	Dr. Archana G Said	Harshal Shete	EmpathVision: A Real Time AI Model for Sign Language to Speech Translation, Scene Description, and Emotion Recognition Using Machine Learning
		Shrutika Yelgunde	
		Sakshee Yande	
		Rajesh Tekawade	
16	Mr.P.S.Sadaphule	Pranav Divekar	Automated Property & Risk Assessment System for Maharashtra
		Vedant Dongare	
		Komal Shendage	
		Siddhi Kadam	
17	Dr.N.S.Patil	Sarthak Nage	Multimodal Speech Fluency and Quality Analysis Using Audio-Text Learning
		Pritam Mundhe	
18	Dr.G.J.Navale	Saumya Soni	SensAI- Intelligent Career Coaching System for Resume Optimization and Employability Enhancement
		Shreyash Trimale	
		Mayur Sapate	
19	Dr. Shraddha B Toney	Pooja Thorat	WeSee – A Helper for the Visually Impaired
		Rutik Tupe	
		Sarthak Velapure	



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

V. INTERNSHIP DETAILS OF YEAR 2025-26

BTECH FINAL YEAR 2025-26		
Sr. No	Name of Student	Industry Name
1	Pedgulwar Atharva Uttam	Datamatic Solutions Pvt Ltd
2	Safai Shivangi Makarand	UnicaPack India Pvt Ltd
3	Salunkhe Om Rajendra	TulaPI
4	Shivalkar Aary Sushil	Altometa Consulting India Pvt Ltd
5	Smith Sunil Mavli	Vighnhar Enterprise
6	Siddhi Sunil Kadam	Beeinspire
7	Tekawade Rajesh Dattatray	KCTI, Bharat Forge Ltd.
8	Sakshee Satish Yande	Heck Data
9	Jayesh Varunkar	Construction
10	Pooja Thorat	Beeinspire
11	Sarthak Velapure	Ergon Technology
12	Devendra Veer	Vighnhar Enterprises
13	Rutik Tupe	Behere Education
14	Mohit Sanjay Wagh	Thynk Technology India OPC Pvt Ltd



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

15	Chemate Pratik Rajesh	Onix
16	Gonde Patil Pranav Bhagwan	Comprinno Technologies
17	Kalpund Anushka Arvind	Tulapi.ai
18	Kulkarni Soham Satish	Onix
19	Maurya Ashwin Rameshchandra	AstralCopilot Pvt Ltd
20	Nage Sarthak Annasaheb	Thynk Technology
21	Narwade Megha Gautam	RFSL (Regional Forensic Sci Laboratory) - State Government, Google Data Analytics Professional Certificate
22	Patil Akanksha Vikram	Airtel Pvt Ltd
23	Bhamare Piyush Pravin	Hevo Technologies India Private Limited
24	Bhosale Hitesh	ThynkTech Technology India
25	Bhosale Karan Maruti	ThynkTech Technology India
26	Bhujbal Ayush Vikas	Inter-University Centre for Astronomy and Astrophysics, Pune
27	Chaudhari Shruti Girish	InfraBeat Technologies Pvt. Ltd
28	Chaudhari Sucheta Hemant	AI Adventures LLP



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

29	Chavan Harshad Dada	ThynkTech Technology India
30	Dalvi Prajwal Sunil	Microlise Telematics Pvt. Ltd
31	Divekar Yash Laxman	Coditas Solution LLP
32	Gandhi Devang Ajay	Tulapi.ai
33	Jagtap Ayush Shailendra	Red Cyberfox LLP
34	Jagtap Prajyot Sanjay	Thynk Technology India
35	Jain Diya Ramesh	Thynk Technology India
36	Jaykar Omkar Maruti	Red Cyberfox LLP
37	Kalyane Pavankumar	Onix Datametica Pvt Ltd
38	Khalane Abhidnya	ThynkTech India
39	Korde Suhani Sureshrao	Hevo Internship
40	Kulkarni Shashwati	Automaton AI Infosystem Pvt. Ltd
41	Mutha Aishwarya Satyen	Airtel Internship
42	Shinde Anish Anil	ThynkTech India
43	Suryawanshi Sujal	ThynkTech India



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

VI. TY BTECH PATENT DETAILS 2025-26 (DIV -A)

Group ID	Student Name	Topic
1	Saylee Gokhare	Empowersafe: AI Driven hespor Wamens safety& Emergency System
	Shraddha Dasgude	
2	Arman Ahmad Khan	Multipurpose Spoon
	Rushikesh Karche	
3	Saurabh S Balagide	Maximizing Section Throughput Using AI-Powered Precise Train Traffic Control
	Devesh Dabhade	
4	Shreya Ghuse	Smart Attendance monitoring System
	Mohit Dargude	
5	Maya Galande	AI Enabled device for dection of cardiac disorder
	Savita Devgire	
6	Kalyani Gangurde	AI based Cyber security data analysis device
	Sakshi Girhe	
7	Sainath Chavan	ML based cloud data analysis
	Gauresh B Aher	
8	Trupti Jagtap	Intelligent IOT devices with an device integrated learning
9	Deep Kale	Safeshield - Ai driven data intrusion detection and prevention, HalpLens
	Manasi Choudhari	
10	Sakshi S Jadhav	Spoon design and workflow
	Ayushi Barapatre	



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

TY BTECH PATENT DETAILS 2025-26

(Div- B)

Group ID	Student Name	Topic
1	Janvi Singh	Neurological Signal Detection Adevice
	Shreya Vernekar	
2	Riddhi Yadav	Wireless network booster device
	Vaidehi Pojage	
3	Harshali Patil	Pediatric Nursing Monitoring Portable Device
	Chetana Nehete	
4	Sanika Mehetre	AR/VR Interactive Device Design
	Mahi Kulkarni	
5	Pallavi Mohite	Coding Assisting Portable Computing Device
	Sanika Mali	
6	Vijayendra Rane	Device For Facial Recognition
	Akash Shingare	
7	Srinidhi Kulkarni	Farm Monitoring Ai-Device
	Neil Landge	
8	Sangram Sasane	Customer Footprint Tracking Device For Mall Analysis
	Sambhaji Zore	
9	Chaitanya Salunke	Skin Cancer Detecting Ai-Patch
	Rohan Salunkhe	
10	Aditya Sahane	Farm Monitoring AI-device



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

	Utkarsh Shende	
11	Shaizan Shaikh	Artificial Intelligence in Mental Health Monitoring: Predictive Analysis
	Jay Pawar	
12	Mitesh Shirude	AI Based Sunglasses For Visual Impaired
	Sandeep Patil	
13	Tanmay Patil	Network intrusion detecting AI device
	Atharv Pandav	
14	Atharva Magar	Farm Monitoring AI-machine
	Hanumant Kshirsagar	
15	Shreya Londhe	Neurological disorder detection AI device
	Prachi Wankhede	
16	Swati Shinde	Intelligent IoT Device with On-Device Federated Learning
	Trupti Jagtap	

VII. GLIMPSES OF SPONSORED PROJECTS 2025-26

Title: AI Driven Tools Management System

Introduction:

Our team is developing a tool management system that can streamline tool issuing and re- turning processes. This tool management system will act as a central information hub which will be used to handle, monitor, and issue tools among other functions. Designed with four user categories (Super Admin Trainer, and Security), each user will carry out his/her function within the system while a certain level of access will be allotted to everyone de- pending on their category. Using the system is the best method of eliminating the manual way of record keeping by introducing the use of computers which will lead to correctness, transparency, and better user-friendliness. Besides, it facilitates the identification of the location of a tool at any point in time, drastically decreases the likelihood of tool loss, and significantly enhances tool management productivity.

Methodology:

The workflow splits tasks across focused sections to keep things running smoothly and with precision.

1. Requirement Analysis: Finding out what tools need to track, when they're issued, returned, and how users log in - plus who sees what, is central. Clear rules about actions and expectations come first, and how fast it runs, how safe it's, and how easy it feels. Practicality checks happen early so limits don't catch anyone off guard during build-up. Mostly, this step sets boundaries that stay in place throughout development. Still, small shifts may happen based on real-world feedback later. In practice, team members adjust plans without changing the main direction much.

2. System Design: At this stage, the overall system structure is outlined. Designing of system architecture, database schema, and user interface layouts are included in the package. Tools like data flow diagrams (DFDs), entity-relationship (ER) diagrams, and UML diagrams can be used for visually



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

representing the system. The system is designed to be scalable, secure, and easily maintainable.

3. **Development:** This step involves the actual code writing of the system. Appropriate frontend, backend, and database technologies are used for system development. Tool management, user login, issuing/returning tools, and record maintenance are some of the features implemented. Code is kept clean and efficient by following coding standards and modular programming practices.

4. **Maintenance:** The main purpose of this stage is to keep the system usable and functional for a long time. Routine operation consists of updating the system, fixing bugs, and improving performance. Introduction of additional features as a result of user feedback is also possible. Ensuring the system security, data backup, and overall smooth operation are also part of the maintenance plan.

Conclusion:

This study introduces a Role-Based Tools Management System designed to enhance the security and streamline industrial tool management procedures. By using role-based access control, central monitoring, and managing digital workflows, the system guarantees regulated use of tools by the staff. Through implementation and testing, it has been proven that the method brought forward greatly minimizes unapproved access, strengthens responsibility, and boosts the performance of operations. Our system offers an expandable and feasible option to industries that want to update their methods of managing tools.

Future Scope:

The proposed Role-Based Tools Management System for Secure and Controlled Industrial Operation can be developed even further in numerous ways to make industrial areas more secure automated scalable, and efficient.

1. Integration with IoT Devices

If the system is combined with IoT-enabled smart tools and sensors, it will be able to capture tool usage, location, and condition data live. This feature will enhance monitoring and help in reducing tool loss and misuse.

2. Biometric Authentication

Biometric verification including fingerprint and face recognition can be added for secure user authentication and regulated tool access.



AISSMS **INSTITUTE OF INFORMATION TECHNOLOGY** **(IOIT)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

3. AI-Based Analytics

Machine Learning and AI could be leveraged to interpret usage patterns, schedule maintenances, and automatically flag anomalous behaviors.

Group Members:

- Manthan Kachare
- Shashwati Kulkarni
- Yadnya Kimbahune
- Abhidnya Khalane

Guide Name: Dr. S. N. Zaware

Project Sponsored By: Skoda Pvt Ltd.



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Title: Precise AI – Financial Data Analysis Using Retrieval-Augmented Generation (RAG)

Introduction

Precise AI is an advanced financial data analysis platform that utilizes Retrieval-Augmented Generation (RAG) to process, interpret, and analyze financial documents and datasets intelligently. The system is designed to assist analysts, investors, and organizations in extracting meaningful insights from complex financial information such as annual reports, balance sheets, profit and loss statements, market data, and investment summaries. By combining semantic retrieval with large language models, Precise AI delivers context-aware and highly relevant responses to user queries, significantly reducing the time and effort required for manual financial

analysis. In addition to textual insights, Precise AI provides graphical analysis for better interpretation of financial trends and metrics. The system can visualize data through charts, graphs, and comparative plots such as revenue growth trends, profit/loss analysis, balance comparisons, and performance distribution graphs. These visual representations help users understand financial performance more effectively and support data-driven decision-making by presenting complex financial information in an intuitive and accessible format.

Methodology

The platform follows a structured RAG-based workflow. Initially, financial documents and datasets are uploaded through the application interface. The backend preprocesses the data by cleaning, extracting, and segmenting textual and tabular information into smaller chunks. These chunks are transformed into vector embeddings using embedding models and stored in a vector database for semantic retrieval. When a user submits a financial query, the system performs similarity search to fetch the most relevant financial content and provides it as context to a large language model. The model then generates an accurate and context-grounded answer based on the

retrieved financial information. This architecture ensures factual relevance while minimizing hallucinations in generated responses.

Conclusion

Precise AI demonstrates the effective integration of Retrieval-Augmented Generation in the financial domain by combining intelligent retrieval, generative AI, and visual analytics into a unified platform. It improves the speed, precision, and usability of financial data analysis while reducing dependency on manual interpretation of large datasets and reports. The system acts as an efficient decision-support tool for financial professionals and organizations.



AISSMS **INSTITUTE OF INFORMATION TECHNOLOGY** **(IOIT)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Future Scope

Precise AI has strong future potential for enterprise-scale industrial deployment. It can be extended for use in banking, fintech, insurance, auditing, investment firms, and large corporate finance teams to analyze massive financial repositories in real time. Future enhancements may include predictive financial forecasting, fraud detection, automated portfolio recommendations, sentiment analysis on market news, integration with ERP/accounting systems, and real-time dashboard analytics. With cloud deployment and distributed architecture, the platform can scale to support large industries handling high-volume financial data while improving strategic planning and operational efficiency.

Group members:

- Pavankumar Kalyane
- Ayush Jagtap
- Omkar Jaykar

Guide Name: Mr.P.S.Sadaphule



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Title: AI-POWERED RECRUITMENT PORTAL.

Introduction

In today's digital era, recruitment is complex due to large application volumes, leading to manual effort, delays, and bias. The AI-Powered Recruitment Portal uses AI and NLP to automate hiring and improve efficiency. It provides resume parsing, semantic job matching, AI-based interviews, cover letter generation, chatbot support, and dashboards. The system ensures faster, fair, and data-driven recruitment while aligning with UN SDG 8: Decent Work and Economic Growth.

Methodology

The system follows a modular approach using FastAPI and AI technologies:

- Requirement analysis and system design
- Resume parsing using pdfplumber and python-docx.
- Job matching using Sentence-BERT and cosine similarity
- AI interviews using Groq/LLaMA with speech processing
- Cover letter generation using LLMs (Groq)
- RAG chatbot using FAISS/Chroma DB
- Cloud deployment using Render, Vercel, and MongoDB Atlas

Conclusion

The portal reduces manual workload, minimizes bias, and enhances candidate experience through automation and real-time interaction. It speeds up hiring decisions and provides secure, scalable solutions suitable for all organizations.

Future Scope

- Video interview and sentiment analysis
- Psychometric assessments
- Bias detection tools
- Blockchain credential verification
- Multi-language NLP support
- ATS/HRMS integration



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes


DEPARTMENT OF COMPUTER ENGINEERING

Guide: Dr. Neha Patil

Sponsorship Received From : VITA AI Ventures Pvt. Ltd.
(Support: AI Models & Architecture)

Submitted By:

- Anshul Adgurwar
- Rakshit Badiger
- Sakshi Kadam

 www.vitasolutions.ai contact@vitasolutions.ai

Date: 16/09/2025


TO WHOMSOEVER IT MAY CONCERN

This is to certify that, VITA AI Ventures Pvt. Ltd. is providing technical sponsorship to the group project "AI Powered Recruitment Portal" conducted by the below candidates from Department Of Computer Engineering, AISSMS Institute of Information Technology, Pune.

List of Candidates

Student Name	Exam No
Rakshit S Badiger	22410006
Anshul Adgurwar	22410001
Sakshi V Kadam	22410055

VITA AI VENTURES PRIVATE LIMITED
Ashwini Shete
VITA AI Ventures Pvt. Ltd.
Name and Signature of Industry Representative


Seal of industry



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Title: DeepFace: A Deep Learning Framework for Face Recognition and Matching

Introduction

The TRUMPF Internal Portal is a full-stack web application developed to centralise and secure day-to-day operations for TRUMPF employees. Designed as an intranet platform, it addresses the growing need for a unified workspace that integrates authentication, file management, real-time communication, attendance tracking, and analytics under a single, role-aware interface. At its core, the portal distinguishes itself through a biometric layer: registered users may authenticate using facial recognition in addition to traditional credentials. This dual-path mechanism raises the security baseline while keeping the user experience frictionless. The platform supports three roles — administrator, supervisor, and standard user — each with granular access controls enforced at both the routing and data layers. This document provides a structured overview of the project's architecture and implementation, the tools and techniques employed, and the directions in which the system can be extended to meet evolving enterprise requirements.

Methodology:

2.1 Technology Stack:

The backend of the system is built using Flask (Python), incorporating Flask-Login for session management and SQLAlchemy as the ORM layer. A SQLite database (site.db) is used for data persistence, while Werkzeug is utilized for secure password hashing.

The frontend is developed using Jinja2 templates, enhanced with custom JavaScript to enable real-time notifications and voice-based greetings.

File handling is managed through a dedicated helper module that enforces:

- File extension filtering
- Per-user storage quotas (default: 100 MB)

2.2 Authentication Architecture

Authentication is implemented using two parallel mechanisms:

- Traditional username/password login
- Biometric (face recognition) login

For biometric authentication:

- A live camera frame is captured
- A 128-dimensional face encoding is generated using the face_recognition library
- The encoding is compared with stored encodings using Euclidean distance thresholding

Key features:

- Multiple encodings per user (stored as JSON arrays) to handle variations in lighting and pose
- All authentication attempts are logged in:
 - auth_attempts.log
 - LoginHistory database table

This ensures a complete audit trail for security and monitoring.

2.3 Core Modules

Dashboard & File Management

- Central dashboard for uploading, searching, and filtering files
- Files stored in per-user directories
- Metadata tracked in the database:
 - Filename
 - File path
 - Upload timestamp

An additional encrypted vault module provides AES encryption for sensitive documents.

Attendance & Analytics

- The AttendanceLog model records:
 - Check-in
 - Check-out events
- Analytics module provides:
 - Usage patterns
 - Login frequency
 - Storage consumption

Displayed through a dedicated HTML interface.



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Messaging & Notifications

- Real-time chat system (chat.py) for **peer-to-peer communication**
- Notification system:
 - Stores alerts using the Notification model
 - Uses **client-side polling (notifications.js)** to display updates

Admin Panel

Administrators can:

- Manage user accounts
- Assign roles
- Approve registrations
- Broadcast announcements
- View audit logs (blockchain-style)

Database evolution is handled via:

- migrate_database.py
- update_db_schema.py

This ensures **schema updates without data loss**.

Conclusion:

The TRUMPF Internal Portal successfully integrates:

- Biometric authentication
- Role-based access control
- Encrypted file storage
- Attendance tracking
- Real-time communication

The system follows a **modular Flask Blueprint architecture**, allowing independent development, maintenance, and testing of each module.

Security Measures

- Hashed credentials
- Face recognition thresholding



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

- AES encryption for files
- Detailed login audit logs

The use of structured database migration ensures minimal downtime, and the system demonstrates reliable performance in multi-user environments. The audit infrastructure also supports enterprise-level traceability and compliance.

Future Scope:

The future scope of the TRUMPF Internal Portal includes enhancing scalability and accessibility by migrating from SQLite to PostgreSQL and deploying the system on cloud platforms such as AWS, Azure, or GCP. Security can be further strengthened by integrating liveness detection techniques like blink detection or depth-map analysis to prevent spoofing in biometric authentication. Developing a mobile application using React Native or Flutter would enable field engineers to access the portal, mark attendance, and manage files remotely. Additionally, incorporating AI-driven analytics can help detect anomalous login patterns and unusual data access, improving security monitoring. Finally, integrating Single Sign-On (SSO) and LDAP with enterprise identity systems like Active Directory or SAML providers would streamline user authentication and centralize credential management across the organization.

Group members:

- Chaitanyaa Kashid
- Abhilasha Chavan
- Sucheta Chaudhari

Guide Name: Dr. C. N. Aher

Sponsored By: TRUMPF , Hinjawadi Phase II, Hinjawadi Rajiv Gandhi Infotech Park, Hinjawadi, Pimpri- Chinchwad, Maharashtra 411057



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Title: OMNIVIEW – AI POWERED SYSTEM FOR DISASTER MANAGEMENT AND DEFENCE STRATEGY

OMNIVIEW is designed with the primary objective of automating the analysis of massive volumes of satellite imagery to enable faster and more accurate decision-making, particularly during time-critical situations such as natural disasters and security events. By eliminating the dependence on slow manual interpretation, the system transforms raw geospatial data into actionable intelligence in near real time.

One of its key advantages is the integration of multiple analytical streams—satellite imagery, weather data, and real-time textual information—into a single, user-friendly dashboard that can be operated even by non-experts. This significantly improves situational awareness, reduces response time, and enhances operational efficiency.

Methodology

The system follows a unified approach that combines computer vision, predictive analytics, and natural language processing within a modular architecture.

- It identifies land-use patterns and detects changes over time
- Forecasts risks such as floods, cyclones, and wildfires using spectral indices and meteorological inputs
- Extracts structured insights from news and social media sources in real time

The methodology relies on advanced deep learning models, including:

- ResNet50 encoder with U-Net decoder for image segmentation
- Change detection models trained on datasets like LEVIR-CD
- NLP techniques to identify disaster-related entities with high accuracy

This integrated approach enables comprehensive situational monitoring and improved decision-making.

Conclusion:

OMNIVIEW effectively bridges the gap between the overwhelming scale of satellite data and the urgent need for timely insights. It enhances both the speed and reliability of analysis while remaining adaptable to new models and data sources.



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

The system aligns strongly with key Sustainable Development Goals (SDGs):

- SDG 9 – Industry, Innovation and Infrastructure
- SDG 11 – Sustainable Cities and Communities
- SDG 13 – Climate Action

By supporting resilient infrastructure, smarter urban planning, and proactive environmental management, OMNIVIEW contributes to sustainable development.

From an industrial perspective, the system has wide applicability across sectors such as:

- Disaster management
- Defense
- Insurance
- Urban development
- Environmental monitoring

In all these domains, rapid and data-driven decision-making is critical, making OMNIVIEW a highly valuable solution.

Group members:

- Udayan Taware
- Mayank Wanare
- Vinit Desai
- Shivam Rajput

Guide Name: Mrs. S. P. Pimpalkar

Sponsored By: ISRO

Title: Rn Dairy Digital Portal : End-to-End Dairy Product Ordering And Inventory Management System

Introduction:

The **Dairy Delights** project is a full-stack web-based application developed to provide an efficient and user-friendly platform for purchasing dairy products online. The system is built using the MERN stack (MongoDB, Express.js, React.js, Node.js), enabling seamless interaction between the frontend user interface and backend services. It follows a modular architecture where the backend is structured using controllers, models, routes, and middleware, ensuring scalability and maintainability. The application provides RESTful APIs to handle functionalities such as user authentication, product management, cart operations, and order processing, with MongoDB used to efficiently store user data, product details, and order information. The system allows users to register and log in securely using JWT authentication, browse available dairy products, add items to the cart, manage quantities, place orders, and track their order history. Additionally, an administrative module is implemented to manage products and monitor customer orders. The frontend is developed using React.js, offering a responsive and dynamic user experience.

Overview:

The **Dairy Delights** project is a full-stack web-based application designed to provide a convenient and efficient platform for purchasing dairy products online. Built using the MERN stack (MongoDB, Express.js, React.js, Node.js), the system enables smooth interaction between the frontend and backend. It offers essential features such as secure user authentication, product browsing, cart management, and order processing, along with an admin module for managing products and orders. The application focuses on delivering a responsive and user-friendly experience while ensuring efficient data handling and system performance.

Conclusion:

The Dairy Delights system is a web-based e-commerce application developed using the MERN stack (MongoDB, Express.js, React.js, Node.js). The system provides an efficient platform for users to browse dairy products, manage their cart, and place orders seamlessly.



AISSMS **INSTITUTE OF INFORMATION TECHNOLOGY** **(IOIT)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Future scope

- Mobile Application Development:
- Advanced Search & Recommendation System:
- Real-time Order Tracking:
- Online Payment Enhancement

Group members:

- Roshan Nikam
- Parv Shah
- Swaraj Kawade

Guide Name: Dr. C. A. Aher

Sponsored By: Hruta IT Solutions

Title: Real-Time Temperature Profiling System for Laboratory Chambers Using Arduino and Desktop Interface

Introduction

The Real-Time Temperature Profiling System for Laboratory Chambers Using Arduino and Desktop Interface is designed to continuously monitor and analyze temperature variations within laboratory environments. Maintaining precise temperature conditions is critical in laboratories, especially in chemical, biological, and pharmaceutical applications where even slight deviations can affect experimental outcomes. This system uses Arduino-based sensors to capture real-time temperature data and transmits it to a desktop interface for visualization and analysis. By automating temperature monitoring, the system eliminates manual errors, improves accuracy, and ensures consistent environmental control.

Objective

The main objectives of this project are:

- To design a real-time temperature monitoring system using Arduino
- To accurately measure and record temperature data inside laboratory chambers
- To provide a desktop interface for visualization and analysis of temperature trends
- To reduce manual monitoring and improve efficiency
- To ensure stable environmental conditions for experiments

Conclusion:

The proposed system successfully provides a reliable and efficient solution for real-time temperature monitoring in laboratory chambers. By integrating Arduino with a desktop interface, the system ensures accurate data collection and easy visualization of temperature changes. It minimizes human intervention, reduces errors, and enhances the overall reliability of laboratory operations. The system proves to be cost-effective, scalable, and suitable for various laboratory applications.



AISSMS **INSTITUTE OF INFORMATION TECHNOLOGY** **(IOIT)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Future Scope

The system can be further enhanced by integrating cloud-based storage for remote monitoring and data access. Adding IoT capabilities would allow real-time alerts via mobile devices when temperature exceeds predefined thresholds. The use of multiple sensors can improve accuracy and enable monitoring of larger areas. Additionally, incorporating data analytics and machine learning techniques can help in predicting temperature fluctuations and improving preventive control mechanisms.

Group members:

- Devang Gandhi
- Avdhoot Chavan
- Suha Karjatkar
- Jayesh Ingale

Guide Name: Dr. S. B. Toney

Sponsored By: Pratyag Technocart Pvt Ltd.



Title: ASK YOUR TRASH - A Smart Bin System for Waste Segregation and Tracking

Introduction:

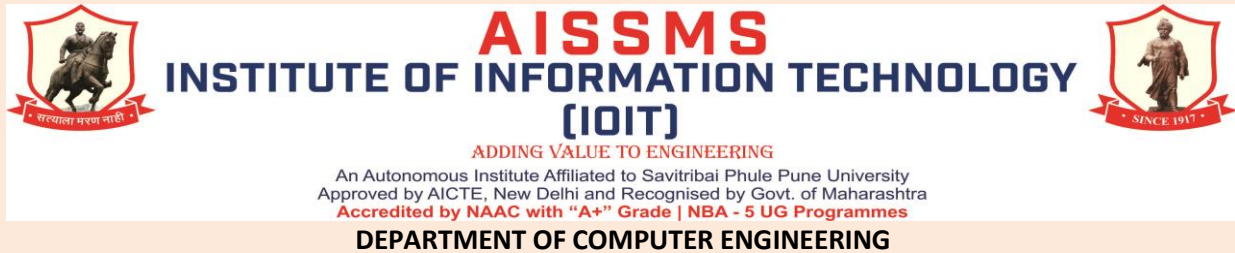
Rapid urbanization and population growth have significantly increased the amount of waste generated in cities, making traditional waste management systems inefficient and difficult to maintain. Conventional waste collection methods rely on fixed schedules and manual monitoring, often leading to overflowing bins, improper segregation, and increased environmental pollution. In addition, existing systems lack transparency and accountability, as there is no proper mechanism to track the type of waste disposed of or the individuals responsible for disposal. To address these challenges, the “Ask Your Trash” project proposes an intelligent IoT-based smart waste management system that combines Artificial Intelligence, Internet of Things (IoT), and cloud-based database technologies. The system uses sensors, QR-based user identification, and a deep learning model to automate waste classification and tracking. Each user is assigned a unique identity through QR code scanning, enabling traceability and accountability for every waste disposal action.

The proposed system utilizes a Raspberry Pi 4B integrated with sensors such as ultrasonic sensors, load cells, and moisture sensors to monitor waste levels and characteristics in real time. A MobileNetV2 convolutional neural network model is used for waste classification into categories such as cardboard, glass, metal, paper, and plastic. The classified waste information, along with user ID, bin ID, timestamp, and weight, is stored in a centralized Firebase Realtime Database. The system also includes a mobile application and analytics dashboard for monitoring user activities and smart bin status. This integrated approach improves waste segregation efficiency, reduces manual work, and promotes sustainable waste disposal practices.

Methodology:

The **Ask Your Trash system** follows a multi-layered architecture consisting of sensing, intelligence, application, and data management layers. The smart bin layer contains ultrasonic sensors for fill-level monitoring, load cells for measuring waste weight, moisture sensors for identifying wet waste conditions, and a Pi Camera module for capturing waste images. A Raspberry Pi 4B acts as the central processing unit for handling sensor data and image classification.

For waste classification, the system uses the MobileNetV2 deep learning model due to its lightweight architecture and suitability for edge deployment. The model was trained on a combined dataset of 20,506 waste images collected from public datasets such as TrashNet and custom datasets. Images were resized to 224×224 pixels and augmented using rotation,



zooming, flipping, brightness adjustment, and shearing to improve generalization. The model classifies waste into five categories: cardboard, glass, metal, paper, and plastic.

The classification process begins when a user scans the QR code attached to the smart bin using the mobile application. After authentication, the user deposits waste into the bin, where the camera captures an image of the waste item. The MobileNetV2 model processes the image and predicts the waste category. Simultaneously, sensors record the weight and fill level of the bin. All collected information, including USER_ID, BIN_ID, waste type, timestamp, and sensor readings, is stored locally in SQLite and periodically synchronized with Firebase Realtime Database using an offline-first architecture.

The mobile application provides features such as QR scanning, waste history tracking, user authentication, reward points, and analytics visualization. An administration dashboard allows authorities to monitor bin status, user activities, and waste collection statistics in real time.

Conclusion:

The Ask Your Trash project successfully demonstrates the integration of IoT, Artificial Intelligence, and cloud technologies for smart waste management and automated waste segregation. By combining sensor-based monitoring, QR-code user identification, and MobileNetV2-based waste classification, the system creates a transparent and accountable waste disposal process. The MobileNetV2 model achieved 94.64% test accuracy with a real-time inference speed of 42 ms per image on Raspberry Pi 4B, making it highly suitable for edge deployment.

The system effectively reduces manual monitoring efforts, improves segregation accuracy, and enables centralized waste analytics through Firebase integration. The offline-first architecture ensures reliable data storage even during internet interruptions. Overall, the project provides a scalable and efficient smart city solution for sustainable waste management.

Future Scope:

The future scope of the **Ask Your Trash** system includes expanding the waste classification dataset to improve model accuracy for additional waste categories such as organic waste and electronic waste. GPS integration can be added to track the location of smart bins and optimize waste collection routes for municipal authorities. Advanced AI models and multi-angle image capture techniques can further reduce classification errors between visually similar waste materials.

The system can also be integrated with municipal waste management infrastructure for city-wide deployment. A reward redemption mechanism can be implemented where users earn points for proper waste disposal and redeem them through partner organizations. Future enhancements may also include predictive analytics for waste generation trends, automated bin



AISSMS **INSTITUTE OF INFORMATION TECHNOLOGY** **(IOIT)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

lid mechanisms, and solar-powered smart bins for improved sustainability and energy efficiency.

Group members:

- Toshita Bhagwate
- Yoshita Bardhe
- Aishwarya Mutha

Guide Name: Dr. Archana G. Said

Sponsored By: Shriman Ecocycle



Title: TrafficIntell: AI-Driven Urban Traffic Intelligence using DeepSORT & Machine Learning

Introduction:

Urban traffic management has become a critical challenge due to rising vehicle density, recurring congestion, and unpredictable signal operations. Conventional systems relying on fixed-time signals and human monitoring fail to provide real-time, adaptive solutions for city mobility.

TrafficIntell addresses these limitations by leveraging state-of-the-art deep learning models — YOLO, DeepSORT, and ByteTrack — to build a sophisticated traffic intelligence framework. By processing continuous video streams, the system identifies, classifies, and tracks vehicles with high precision, enabling automated monitoring of traffic flows and detection of anomalies such as signal faults, wrong-way driving, and sudden congestion.

The system was evaluated on the UA-DETRAC and AI City Challenge datasets, achieving **92.4% mAP**, **88.7% MOTA**, and real-time inference at **55 FPS**, making it suitable for deployment in real-world urban environments. This project demonstrates the potential of deep learning to transform traffic monitoring into a scalable, data-driven foundation for smart city infrastructure.

- **Methodology:**

- **Data Preparation:**

Large-scale traffic datasets including UA-DETRAC, AI City Challenge, KITTI, and MOT Challenge were used, comprising multi-lane and multi-object urban scenes. Data was collected under varied lighting and weather conditions (day, night, rain, fog) to ensure model robustness. Frames were extracted at 25–30 FPS, resized to 640×640, and pixel values normalized to [0, 1]. Augmentation techniques including random flips, brightness/contrast adjustments, rotations, and Gaussian noise were applied to prevent overfitting.

System Architecture & Model Pipeline

The pipeline consists of five stages:

- **Frame Preprocessing:** Input frames are resized and normalized for uniform deep learning input.
- **Vehicle Detection (YOLOv8):** A CNN-based model detects vehicles (cars, buses, trucks, two-wheelers, pedestrians) with bounding boxes and confidence scores using a CSPDarknet backbone.
- **Multi-Object Tracking:** DeepSORT uses CNN appearance embeddings, Kalman filter motion



AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)



ADDING VALUE TO ENGINEERING
An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

prediction, and the Hungarian algorithm for identity association. ByteTrack retains low-confidence detections to improve recall in dense traffic, reducing ID switches.

- **Traffic Flow Analysis:** Unique vehicle IDs are tracked across defined zones to compute vehicle counts, speed estimates, and congestion density.
- **Anomaly Detection:** The system flags malfunctioning traffic signals, wrong-way driving, and sudden stoppages in real time.

Two configurations were benchmarked: YOLOv8 + DeepSORT (appearance-based baseline) and YOLOv8 + ByteTrack (primary configuration). ByteTrack was selected as the primary tracker due to its superior handling of partial occlusions and overlapping vehicles at busy intersections.

Conclusion:

TrafficIntell successfully demonstrates a real-time, AI-driven traffic intelligence system capable of vehicle detection, multi-object tracking, flow analysis, and anomaly detection across diverse urban conditions. The proposed YOLOv8 + ByteTrack pipeline achieves **92.4% detection accuracy (mAP)** and **88.7% MOTA**, outperforming existing approaches including YOLOv5 + DeepSORT (87.2%) and FairMOT (84.5%), while maintaining real-time performance at **55 FPS**.

The system maintains robust performance across varying environmental conditions — achieving **95.2% mAP in daytime** and **89.8% in rainy/foggy conditions** — making it reliable for continuous real-world deployment. The primary remaining challenge is accuracy degradation under severe occlusion in dense traffic, particularly for two-wheelers and closely spaced vehicles.

Future Scope

Planned directions for future development include:

- **Sensor Fusion:** Integrating LiDAR and radar data to improve detection accuracy under low visibility conditions such as heavy rain and dense fog.
- **Advanced Architectures:** Exploring Transformer-based detection models (e.g., DETR, RT-DETR) for improved handling of occluded and small objects.
- **Dataset Expansion:** Broadening training data to include rare traffic scenarios, partially occluded signs, and diverse geographic settings.
- **Edge Deployment:** Optimizing the pipeline for embedded and edge devices (e.g., Jetson Nano, Raspberry Pi) to enable cost-effective city-wide deployment.
- **Smart City Integration:** Connecting TrafficIntell outputs to IoT-based adaptive signal control systems, enabling dynamic signal timing based on real-time traffic density.
- **Adaptive Signal Control:** Extending from monitoring to active control — automatically adjusting signal durations based on queue lengths and vehicle counts per lane.



AISSMS **INSTITUTE OF INFORMATION TECHNOLOGY** **(IOIT)**



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF COMPUTER ENGINEERING

Group members:

- Sahil Shilimkar
- Yuvaraj Poojary
- Soham Rautmare

Guide Name: Dr. Girish Navale

Sponsored By: Shree Ganesh Engineering, an Auto Ancillary Unit based in Bhosari, Pune.