ACADEMIC YEAR 2025-26 • CONSOLIDATED R&D MAGAZINE

Research & *Development*

Nutan Maharashtra Institute of Engineering & Technology

A complete, department-wise institutional research synthesis covering publications, patents, funded activity, and strategic insights across 2021-22 to 2025-26.

2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26

300+
Indexed / Scholarly Outputs
Across departments

50+
Patents / IP Actions
Filed and granted

₹31L+
Research Funding
Visible in source set

8
Research Departments
From foundation to AI

785+	60+	8	5
Research Outputs	Patents & IP	Departments	Academic Years

NMVPM NMIET

AICTE • NAAC • NBA
Institute-level accreditation-aligned R&D documentation

R&D Lab Members

INNOVATE • RESEARCH • TRANSFORM

Dr. Pramod Patil
Director

Dr. Vilas Deotare
Dean R&D

Dr. Digvijay Patil
Associate Dean R&D

Prof. Rupali Kaldoke
R&D Coordinator • CE

Prof. Sujit Chaudhari
R&D Coordinator • CSE

Prof. Sarika B. Patil
R&D Coordinator • E&TC

Prof. Ravindra Gahane
R&D Coordinator • E&TC

Dr. Anuj Khond
R&D Coordinator • Mechanical

Dr. Koteswararao Seelam
R&D Coordinator • AIDS

Ms. Dipika Paranjape
R&D Coordinator • CSE AI

Dr. Aniruddh Dubal
R&D Coordinator • First Year

Dr. Vivek Nagargoje
R&D Coordinator • IT

Dr. Asmat Ara Shaikh
R&D Coordinator • MBA

Prof. Saransh Kushwaha
R&D Coordinator • MCA

Focus areas: AI, healthcare, communications, materials, smart systems, and applied engineering.

INDEX / TABLE OF CONTENTS

Structured navigation for the full magazine

Each department begins on a new page and follows the same four-page rhythm: snapshot, trend, evidence, and roadmap. This makes the magazine easy to scan while preserving a strong editorial flow.

How to read this report

- Start with the executive summary for institutional signals.
- Use departmental trend pages for year-wise output movement.
- Use evidence pages for representative outputs and venues.
- Use roadmap pages for NAAC/NBA-oriented improvement actions.

Magazine logic

1. Source reports and lab board files
2. Department-wise synthesis
3. Visual dashboards and insights
4. Roadmap and closing note

EXECUTIVE SUMMARY

From publication volume to institutional research identity

The consolidated evidence shows a strong publication culture, visible patent activity, and a clear shift toward applied artificial intelligence, data science, healthcare systems, smart communication, and interdisciplinary engineering.

8
Departments
Institution-wide view

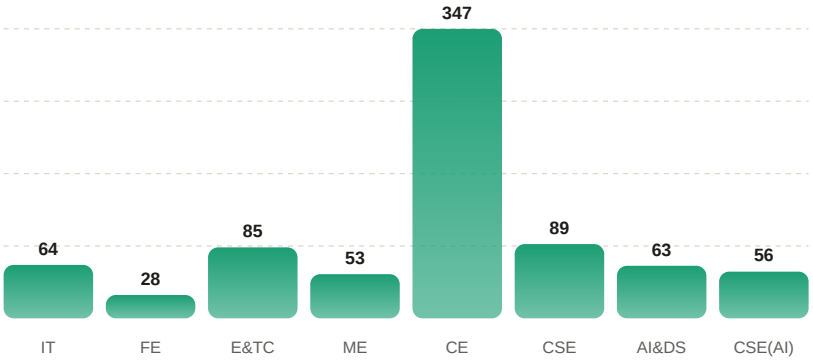
2024-25
Peak research year
Several departments

Computer Engg.
High-volume unit
347 reported measure

AI & DS
Emerging growth
Fast scaling

COMPARATIVE INSTITUTIONAL OUTPUT

Reported annual output measure used in the source synthesis.



Institutional strengths

- Steady publication growth across departments
- Balance between journals and conferences
- Visible applied research themes in AI and engineering
- Multiple departments with patent and IP activity

Priority opportunities

- Increase funded projects and consultancy
- Strengthen research MoUs and collaborations
- Convert publication momentum into prototypes
- Track annual outputs through a common dashboard

Interpretive summary

The institute is moving from research participation toward research leadership, with AI-based work acting as the strongest cross-cutting theme.

5-YEAR INSTITUTIONAL RESEARCH TRAJECTORY

INSTITUTIONAL OVERVIEW AND METHODOLOGY

How the consolidation was built

Source files were interpreted department-wise — summary sheets, year-wise trends, publications, patents, and project evidence. Where tables were incomplete, interpretation remained conservative.

1 Source reports → 2 Dept synthesis → 3 Classification → 4 Insights

Department profile map

DEPT	EVIDENCE IN SOURCE	RESEARCH PROFILE
IT	Publications, books, patents, copyrights	Balanced and mature
First Year	Google Scholar + early Scopus entries	Early-stage, growing
E&TC	SCI/WOS, Scopus, patents, funded work	Strong, diversified
Mechanical	SCI/WOS, Scopus, patents, funded projects	Stable, application-led
Computer Engg.	High UGC volume, journals, patents	Very high volume
CSE	89 outputs, active conferences	AI/ML-centric
AI & DS	Rapid growth in papers and applied AI	Fast-scaling
CSE(AI)	Balanced SCI/WOS, Scopus, patents	Well-rounded

Methodological note

- Counts taken directly from source documents.
- Qualitative notes retained where totals were ambiguous.
- Style mirrors NBA/NAAC-ready documentation.

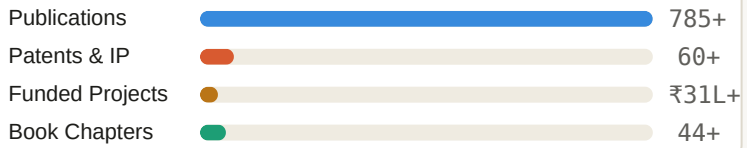
Cross-cutting observation

The strongest common theme is applied AI and data-driven engineering; improvement area is external engagement — funded projects, consultancy, and MoUs.

"Research is formalized curiosity. It is poking and prying with a purpose."

— Zora Neale Hurston

IP & OUTPUT SNAPSHOT



IT

Information Technology

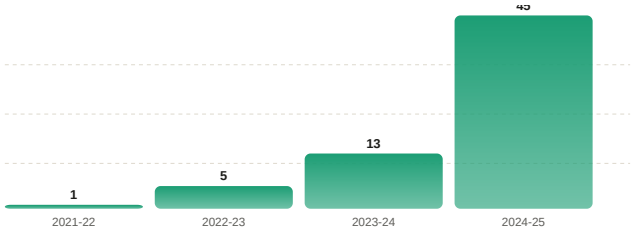
Balanced research with a sharp rise in 2024-25. The portfolio combines indexed publications, book chapters, patents, and copyrights.

Machine Learning | Deep Learning | Healthcare AI | Security

33	2	2
Publications	Books	Chapters

1	5	13	45
2021-22	2022-23	2023-24	2024-25

YEAR-WISE RESEARCH OUTPUT



Key takeaways

- Strong applied AI research identity
- Healthy spread across publications and IP
- Visible continuity across the five-year window

Representative evidence base

2021-22

Math Accessibility for Blind People in Society Using Machine Learning

Dr. Prasad Dhore • ECS Transactions

2022-23

Optimization of Deep Generative Intrusion Detection System for Cloud Computing

Prof. Nitin Wankhade • EAI Scalable Information Systems

MORE PUBLICATIONS

2024-25 **Alzheimer Disease Forecasting using hybrid CNN-LSTM with PSO**
Prof. Kapil Wagh • IEEE ESCI 2024

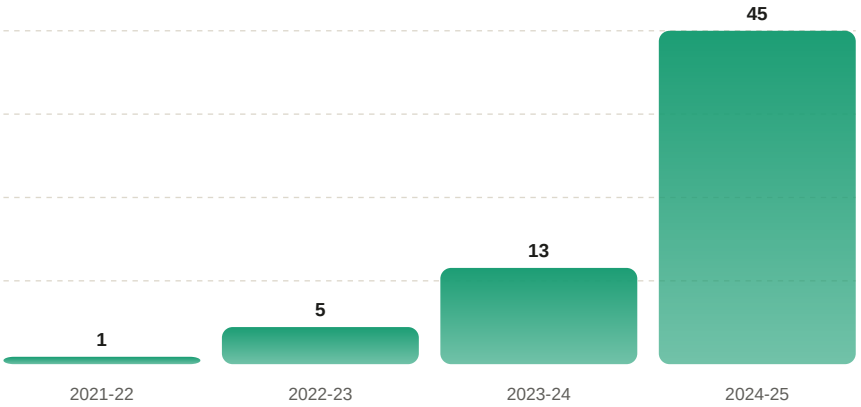
2024-25 **Mathematical Evaluation of Deep Learning Architecture**
Dr. Chandrakant Kokane • Panamerican Mathematical Journal

2023-24 **ML Approaches for Anomaly Detection in Industrial Control Systems**
Prof. Supriya Bhosale • ICIMMI '23

2023-24 **DeepADRA: predicting adrenergic inhibitors using deep learning**
Prof. Nitin Wankhade • J. of Biomolecular Structure and Dynamics

INFORMATION TECHNOLOGY RESEARCH TREND

Annual output plotted from the source summary.



Interpretive note

The sharp rise in 2024-25 shows how publication momentum, copyrights, and patents converged into a visible research peak.

Category balance

Scopus / UGC Papers	33
Books	2
Book Chapters	2
Patents	6
Copyrights	21

Research identity

- Machine Learning
- Deep Learning
- Healthcare AI
- Security

Annual interpretation

- 2021-22 starts the cycle with an early baseline.
- 2023-24 and 2024-25 show the latest trend direction.
- The department uses a mix of publication, IP, and applied outputs.

RESEARCH CATEGORY BALANCE

Scopus Journals	33
UGC Publications	26
Patents	6
Copyrights	21
Books/Chapters	4

YEAR-ALIGNED PUBLICATIONS

2024-25	**Assessment of Bitumen Paver and HMP Efficiency for a Road Project**	Dr. Prasad Dhore • Panamerican Mathematical Journal
2023-24	**Tomato Plant Disease Identification via Deep Learning Technique**	Prof. Supriya Bhosale • Int. Journal of Image and Graphics
2022-23	**Optimization of Deep Generative Intrusion Detection System for Cloud Computing**	Prof. Nitin Wankhade • EAI Endorsed Transactions

FEATURED PUBLICATIONS — YEAR-WISE CONTEXT

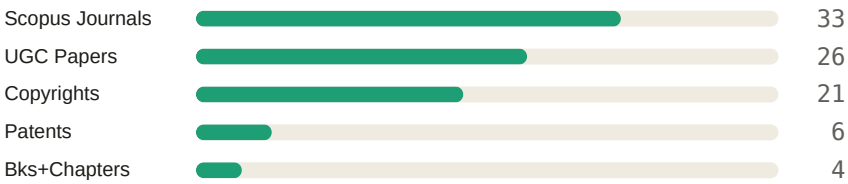
Selected representative publications

YEAR	FACULTY / AUTHOR	TITLE	VENUE / JOURNAL
2021-22	Dr. Prasad Dhore	Math Accessibility for Blind People in Society Using Machine Learning	ECS Transactions
2022-23	Prof. Nitin Wankhade	Optimization of Deep Generative Intrusion Detection System for Cloud Computing	EAI Scalable Information Systems
2023-24	Prof. Kapil Wagh	Alzheimer Disease Progression Forecasting using hybrid CNN-LSTM with PSO optimization	IEEE ESCI 2024
2024-25	Dr. Chandrakant Kokane	Mathematical Evaluation of Deep Learning Architecture	Panamerican Mathematical Journal

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

IT OUTPUT CATEGORY BREAKDOWN



What the evidence suggests

- More funded projects needed
- Industry-linked consultancy can be strengthened
- Strong applied AI research identity

Evidence cards

2023-24
Alzheimer Disease Progression Forecasting using hybrid CNN-LSTM with PSO optimization
Prof. Kapil Wagh • IEEE ESCI 2024

2024-25
Mathematical Evaluation of Deep Learning Architecture
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DeepADRA: predicting adrenergic inhibitors using deep learning
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Journal of Biomolecular Structure and Dynamics

2021-22
Utilizing ML Approaches for Anomaly Detection in Industrial Control Systems
Prof. Supriya Bhosale • ICIMMI '23

IT PUBLICATION CATEGORY BREAKDOWN

Scopus Journals	33
Patents Filed	6
Copyrights	21
Books / Chapters	4

Strength / risk framing

STRENGTH
Strong applied AI research identity

STRENGTH
Healthy spread across publications and IP

STRENGTH
Visible continuity across the five-year window

GAP / RISK
More funded projects needed

GAP / RISK
Industry-linked consultancy can be strengthened

Improvement flow

1. Build a visible AI research cluster
2. Translate patents into prototype pathways
3. Pursue one collaborative grant cycle

Department outlook

Overall outlook: Balanced research with a sharp rise in 2024-25. The portfolio combines indexed publications, book chapters, patents, and copyrights, showing a mature and diversified research identity.

Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

SELECTED RESEARCH PAPERS

2024-25 **Alzheimer Disease Progression Forecasting using hybrid CNN-LSTM with PSO optimization**
Prof. Kapil Wagh • IEEE ESCI 2024

2024-25 **Mathematical Evaluation of Deep Learning Architecture**
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2023-24 **Tomato Plant Disease Identification via Deep Learning Technique**
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2022-23 **Optimization of Deep Generative Intrusion Detection System for Cloud Computing**
Prof. Nitin Wankhade • EAI Endorsed Transactions

RESEARCH OUTPUT TREND — INFORMATION TECHNOLOGY

First Year

First Year Engineering

An emerging research culture is visible even at the first-year stage, with growing Google Scholar output and a small but meaningful Scopus presence in materials and optoelectronics.

Thin Films | Nanomaterials | Optoelectronics | Applied Physics

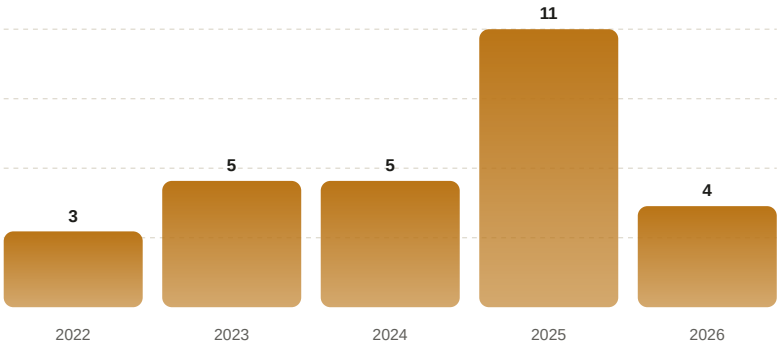
28 Google Scholar Papers	11 2025 Peak
3 Scopus-visible	Thin Films Research Direction

2022	2023	2024	2025
3	5	5	11

Headline trend

YEAR-WISE RESEARCH OUTPUT

Higher bars indicate stronger annual activity.



Key takeaways

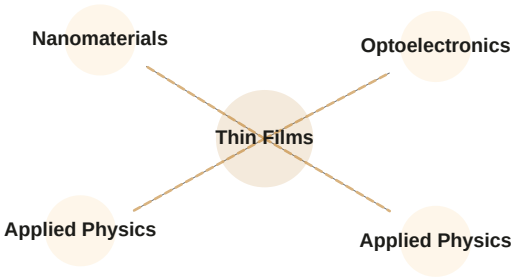
- Clear growth trajectory
- Strong foundation for interdisciplinary projects
- Early evidence of academic activity

Representative evidence base

2026
Annealing-induced modifications in Al doped ZnO thin films
K. More et al. • Next Nanotechnology

2026
Morphology-controlled synthesis of MgO@g-C3N4 nanocomposites as photocatalysts
P. Gaikwad et al. •
Inorganic Chemistry Communications

Concept map



DEPARTMENT RESEARCH PUBLICATIONS

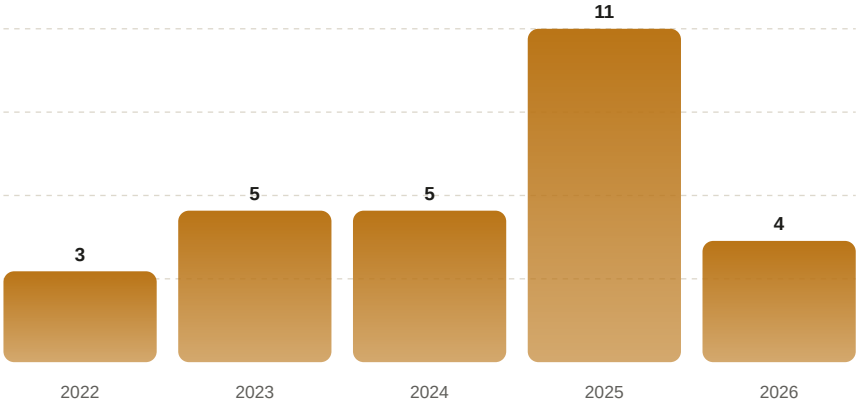
2026 **Annealing-induced modifications in Al doped ZnO thin films: structural and photoelectrical properties**
K. More et al. • Next Nanotechnology

2026 **Morphology-controlled synthesis of MgO@g-C3N4 nanocomposites as sunlight-driven photocatalysts**
P. Gaikwad et al. • Inorganic Chemistry Communications

2026 **Optical and Surface Morphology Study of NiO Thin Films for Optoelectronic**

FIRST YEAR ENGINEERING RESEARCH TREND

Annual output plotted from the source summary.



Interpretive note

The curve rises steadily and confirms that the first-year environment is already developing a research habit.

Category balance

Google Scholar Papers	28
Scopus-visible Papers	3

Research identity

- Thin Films
- Nanomaterials
- Optoelectronics
- Applied Physics

Annual interpretation

- 2022 starts the cycle with an early baseline.
- 2025 and 2026 show the latest trend direction.
- The department uses a mix of publication, IP, and applied outputs.

RESEARCH CATEGORY BALANCE

Google Scholar	28
Scopus Papers	3
Peak Year (2025)	11

YEAR-ALIGNED PUBLICATIONS

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FEATURED PUBLICATIONS — YEAR-WISE CONTEXT

2026 **Annealing-induced modifications in Al doped ZnO thin films: structural and photoelectrical properties**
K. More et al. • Next Nanotechnology

2026 **Morphology-controlled synthesis of MgO@g-C3N4 nanocomposites as sunlight-driven photocatalysts**
P. Gaikwad et al. • Inorganic Chemistry Communications

2026 **Optical and Surface Morphology Study of NiO Thin Films for Optoelectronic Applications**
A. Rakshe • Scopus Journal

Selected representative publications

YEAR	FACULTY / AUTHOR	TITLE	VENUE / JOURNAL
2026	K. More et al.	Annealing-induced modifications in Al doped ZnO thin films	Next Nanotechnology
2026	P. Gaikwad et al.	Morphology-controlled synthesis of MgO@g-C3N4 nanocomposites as photocatalysts	Inorganic Chemistry Communications
2026	A. Rakshe	Optical and Surface Morphology Study of NiO Thin Films for Optoelectronic Applications	Scopus paper listed in source

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

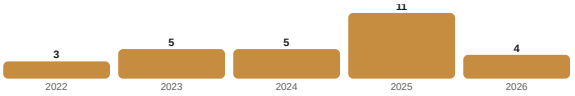
What the evidence suggests

- Shorter source set than other departments
- Scopus depth is still limited
- Clear growth trajectory

Evidence cards

2026
Optical and Surface Morphology Study of NiO Thin Films for Optoelectronic Applications
A. Rakshe • Scopus paper listed in source

ANNUAL OUTPUT TREND (GOOGLE SCHOLAR)



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Morphology-controlled synthesis of MgO@g-C3N4 nanocomposites as sunlight-driven photocatalysts
P. Gaikwad et al. • Inorganic Chemistry Communications

Strength / risk framing

STRENGTH
Clear growth trajectory

STRENGTH
Strong foundation for interdisciplinary projects

STRENGTH
Early evidence of academic activity

GAP / RISK
Shorter source set than other departments

GAP / RISK
Scopus depth is still limited

Improvement flow

1. Seed mini-projects into paper-ready work
2. Create interdisciplinary science clusters
3. Mentor student-faculty co-authorship

SELECTED RESEARCH PAPERS

2026 Annealing-induced modifications in Al doped ZnO thin films: structural and photoelectrical properties
K. More et al. • Next Nanotechnology

2026 Morphology-controlled synthesis of MgO@g-C3N4 nanocomposites as sunlight-driven photocatalysts
P. Gaikwad et al. • Inorganic Chemistry Communications

2026 Optical and Surface Morphology Study of NiO Thin Films for Optoelectronic Applications
A. Rakshe • Scopus Journal

Department outlook

Overall outlook: An emerging research culture is visible even at the first-year stage, with growing Google Scholar output and a small but meaningful Scopus presence in materials and optoelectronics.

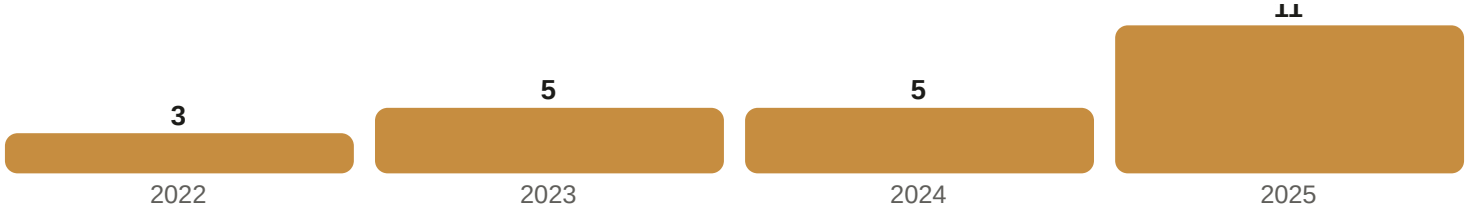
Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

RESEARCH OUTPUT TREND – FIRST YEAR ENGINEERING



FIRST YEAR YEAR-WISE OUTPUT PROGRESS

2022	3 papers	Initial baseline output
2023	5 papers	Steady increase in materials research
2024	5 papers	Optoelectronics theme emerging

E&TC

Electronics & Telecommunication

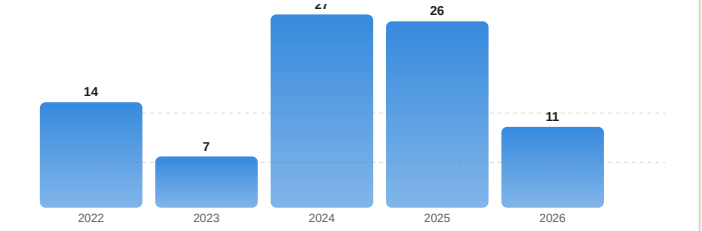
Broad and mature profile — SCI/WOS, Scopus journals, conferences, books, patents, and strong early patent activity. Application-led.

Communications | AI | Cybersecurity | Healthcare

16	40	12
SCI/WOS	Scopus	Conferences

14	7	27	26
2022	2023	2024	2025

YEAR-WISE RESEARCH OUTPUT



Key takeaways

- Balanced publication spread
- Broad technical + applied portfolio
- Strong patent culture in early years

Representative publications

2026

Enhancing forensic human identification using panoramic dental radiographs

Dr. Sagar V. Joshi • Knowledge-Based Systems

2025

Mathematical models for cognitive systems using differential geometry

Dr. Sagar V. Joshi • Journal of Interdisciplinary Mathematics

MORE PUBLICATIONS

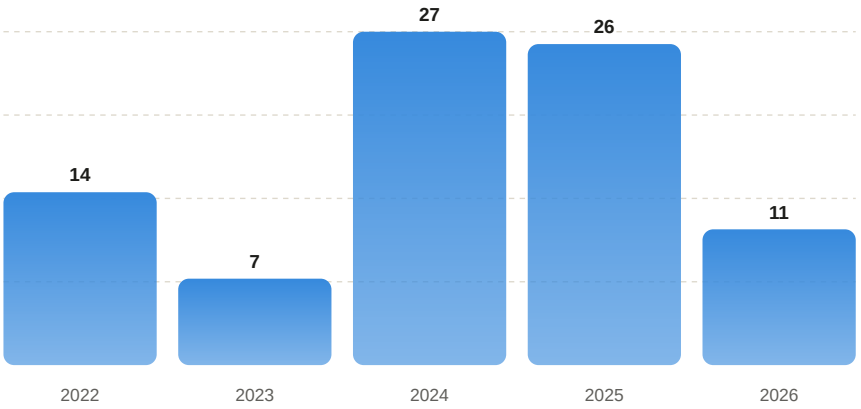
2025 **Traffic Flow Optimization in Smart Cities Using Queueing Theory**
Dr. Sagar V. Joshi • Journal of Information & Optimization Sciences

2025 **Dynamic Neural Architecture Search for Optimized Deep Learning**
Dr. Sushma Bhosle • J. of Information & Optimization Sciences

2025 **ML Applications in Hospital Pharmacy for Predicting Drug Shortages**
Prof. Sarika B. Patil • Research Journal of Pharmacy and Technology

ELECTRONICS & TELECOMMUNICATION ENGINEERING RESEARCH TREND

Annual output plotted from the source summary.



Interpretive note

The pattern is steady and diverse, with strong strength in SCI/WOS and Scopus-based publication streams.

Category balance

SCI/WOS	16
Scopus Journals	40
Conference Papers	12
Book Chapters	5
Patents	12

Research identity

- Communications
- AI
- Cybersecurity
- Healthcare Systems

Annual interpretation

- 2022 starts the cycle with an early baseline.
- 2025 and 2026 show the latest trend direction.
- The department uses a mix of publication, IP, and applied outputs.

RESEARCH CATEGORY BALANCE

SCI/WOS	16
Scopus Journals	40
Conferences	12
Patents	12
Book Chapters	5

YEAR-ALIGNED PUBLICATIONS

2025 **Mathematical models for cognitive systems using differential geometry and reinforcement learning**
Dr. Sagar V. Joshi • Journal of Interdisciplinary Mathematics

2025 **Multi-Sensor System for Optimum Irrigation and Plant Disease Detection Using MLP on Mango Plant**
Dr. Sagar V. Joshi • IEEE SAS

2024 **Adaptive ECC-RSA encryption for IoT healthcare security with blockchain**
Dr. Vilas Deotare • Journal of Mechanics in Medicine and Biology

2025 **Traffic Flow Optimization in Smart Cities Using Queueing Theory and Dynamical System Analysis**
Dr. Sagar V. Joshi • Journal of Information & Optimization Sciences

Selected representative publications

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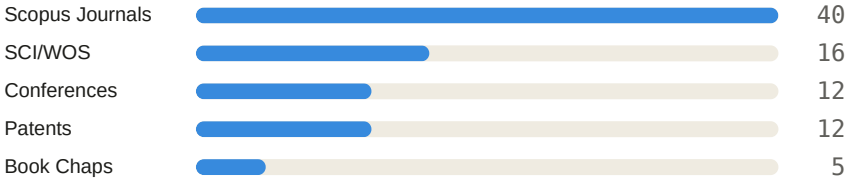
2025	Dr. Sagar V. Joshi	Mathematical models for cognitive systems using differential geometry and reinforcement learning	Journal of Interdisciplinary Mathematics
2025	Dr. Sushma Bhosle	Dynamic Neural Architecture Search for Efficiently Optimized Deep Learning Models	Journal of Information & Optimization Sciences
2024	Dr. Vilas Deotare	Adaptive ECC-RSA encryption for IoT healthcare security with blockchain	Journal of Mechanics in Medicine and Biology

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

E&TC OUTPUT CATEGORIES



What the evidence suggests

- Consultancy and MoUs need visibility
- One table row in source was inconsistent
- Balanced publication spread

Evidence cards

2025
Dynamic Neural Architecture Search for Efficiently Optimized Deep Learning Models
Dr. Sushma Bhosle •
Journal of Information & Optimization Sciences

2024
Adaptive ECC-RSA encryption for IoT healthcare security with blockchain
Dr. Vilas Deotare •
Journal of Mechanics in Medicine and Biology

2025
Multi-Sensor System for Optimum Irrigation and Plant Disease Detection Using MLP
Dr. Sagar V. Joshi • IEEE SAS

2025
Discrete Algebra-Based Neural Models for Secure Information Transmission
Dr. Sagar V. Joshi •
Journal of Discrete Mathematical Sciences

2024
Machine Learning Applications in Hospital Pharmacy for Predicting Drug Shortages
Prof. Sarika B. Patil •
Research Journal of Pharmacy and Technology

E&TC CATEGORY SUMMARY

SCI/WOS	16
Scopus Journals	40
Conferences	12
Book Chapters	5

Strength / risk framing

STRENGTH
Balanced publication spread

STRENGTH
Broad technical + applied portfolio

STRENGTH
Strong patent culture in early years

GAP / RISK
Consultancy and MoUs need visibility

GAP / RISK
One table row in source was inconsistent

Improvement flow

1. Scale funded translational prototypes
2. Create themed clusters for IoT and healthcare
3. Strengthen industry validation

Department outlook

Overall outlook: A broad and mature profile with SCI/WOS, Scopus journals, conference papers, books, patents, and strong early patent activity. The department is both foundational and application-led.

Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

SELECTED RESEARCH PAPERS

2026 **Enhancing forensic human identification using panoramic dental radiographs with binarized Simplicial CNN**
Dr. Sagar V. Joshi • Knowledge-Based Systems

2025 **Traffic Flow Optimization in Smart Cities Using Queueing Theory and Dynamical System Analysis**
Dr. Sagar V. Joshi • Journal of Information & Optimization Sciences

2025 **Machine Learning Applications in Hospital Pharmacy for Predicting Drug Shortages**
Prof. Sarika B. Patil • Research Journal of Pharmacy and Technology

2024 **Adaptive ECC-RSA encryption for IoT healthcare security with blockchain**
Dr. Vilas Deotare • Journal of Mechanics in Medicine and Biology

RESEARCH OUTPUT TREND

Mechanical

Mechanical Engineering

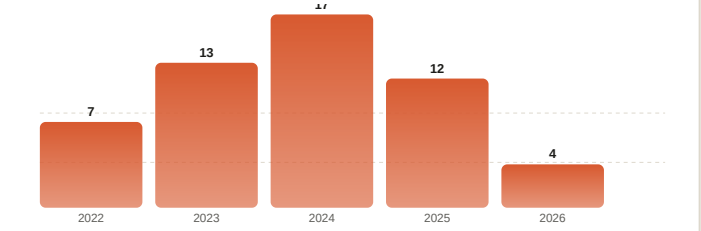
Stable thermal-fluid research core — materials and manufacturing. Healthy publication base with a positive funded-project signal in 2026.

CFD | Heat Transfer | Materials | Manufacturing

15	23	9
SCI/WOS	Scopus	Conferences

7	13	17	12
2022	2023	2024	2025

YEAR-WISE RESEARCH OUTPUT



Key takeaways

- Strong thermal and CFD core
- Stable multi-year output
- Positive funded research entry in 2026

Representative publications

2026
CFD analysis of heat transfer using NACA0021 and NACA2421 aerofoil inserts
Prof. Rohit Jadhao • Energy Sources Part A

2025
Aerofoil-based passive heat transfer enhancement
Prof. Rohit Jadhao • Engineering Research Express

MORE PUBLICATIONS

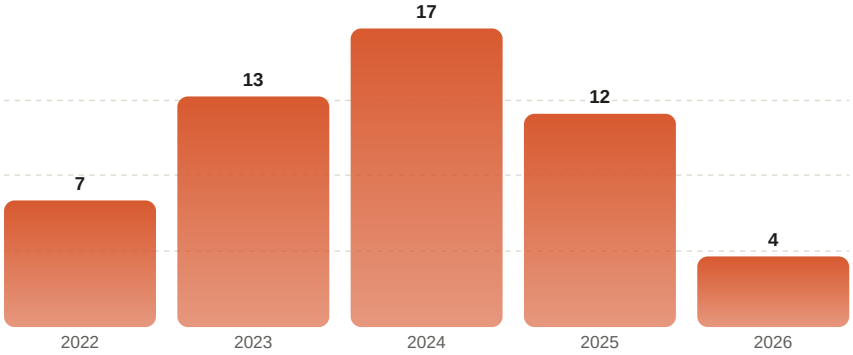
2025 **A chronological review of heat transfer enhancement using inserts in channel flows**
Prof. Rohit Jadhao • Physica Scripta

2024 **Numerical investigation of FGMs with discontinuities under localized loadings**
Dr. Mishra Kundan • Mechanics Based Design

2022 **CFD Simulation and Validation of Slurry Erosion Wear using Slurry Pot Test Rig**
Dr. More Satish R. • Trends in Sciences

MECHANICAL ENGINEERING RESEARCH TREND

Annual output plotted from the source summary.



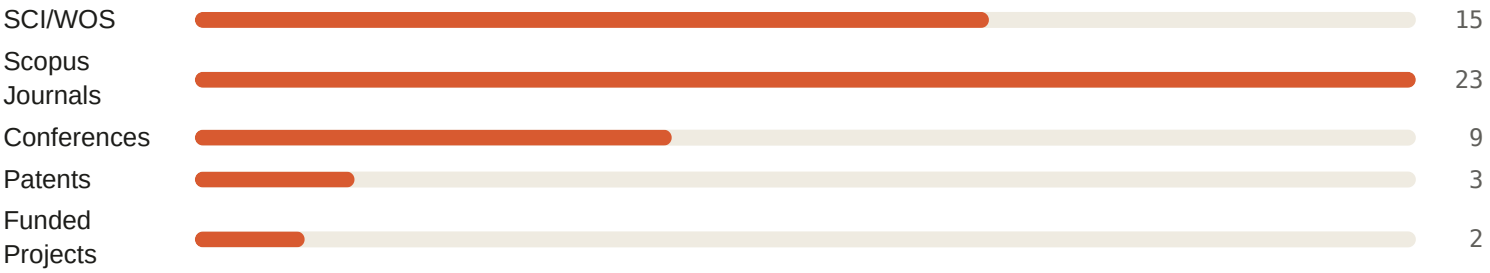
Interpretive note

Stable baseline across five years — 2024 is the strongest year, with funded research arriving in 2026.

Research identity

- CFD
- Heat Transfer
- Materials
- Manufacturing

RESEARCH CATEGORY BALANCE



YEAR-ALIGNED PUBLICATIONS

2025 **Aerofoil-based passive heat transfer — future perspective**
Prof. Rohit Jadhao • Engineering Research Express

2025 **Comparative analysis of aerobeads and aerofoil shapes for heat transfer**
Prof. Rohit Jadhao • ASME IMECE

2024 **Numerical investigation of FGMs under localized loadings**
Dr. Mishra Kundan • Mechanics Based Design

2023 **Exergy loss and performance of marine freshwater generating system**
Dr. Sapali S. N. • Journal of Thermal Engineering

"Engineering is the closest thing to magic that exists in the world."
— Elon Musk

KEY NUMBERS

15	23
ME SCI/WOS	Scopus

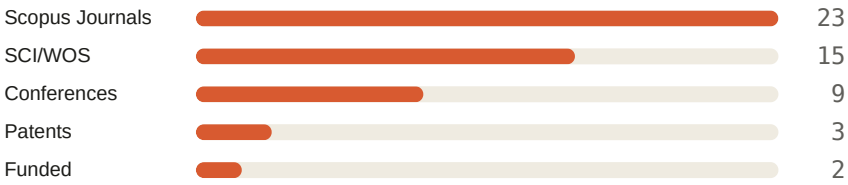
Selected representative publications

YEAR	FACULTY / AUTHOR	TITLE	VENUE / JOURNAL
2026	Prof. Rohit Jadhao	Comparative CFD analysis of heat transfer enhancement using aerofoil inserts	Energy Sources Part A
2025	Prof. Rohit Jadhao	Overview of the future perspective of aerofoil-based passive heat transfer enhancement	Engineering Research Express
2024	Dr. More, Satish R.	Effects of low-power laser hardening on biocompatible SAE 420 steel	Journal of Materials Research and Technology
2023	Dr. Sapali, Shivalingappa Nagappa	Estimation and analysis of exergy loss in marine freshwater generating system	Journal of Thermal Engineering

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

MECHANICAL OUTPUT CATEGORIES



What the evidence suggests

- Consultancy not visible in source summary
- Industry collaboration can be broadened
- Strong thermal and CFD core

Evidence cards

2024
Effects of low-power laser hardening on biocompatible SAE 420 steel
Dr. More, Satish R. •
Journal of Materials Research and Technology

2023
Estimation and analysis of exergy loss in marine freshwater generating system
Dr. Sapali, Shivalingappa Nagappa •
Journal of Thermal Engineering

2025
Comparative analysis of aerobeads and aerofoil shapes for heat transfer in heat exchangers
Prof. Rohit Jadhao • ASME IMECE

2022
CFD Simulation and Experimental Results Validation of Slurry Erosion Wear
Dr. More Satish R. • Trends in Sciences

2024
Effects of low-power laser hardening on mechanical and metallurgical properties of SAE 420 steel
Dr. More Satish R. •
Journal of Materials Research and Technology

MECHANICAL CATEGORY SUMMARY

SCI/WOS	15
Scopus Journals	23
Conferences	9
Patents	3

Strength / risk framing

STRENGTH
Strong thermal and CFD core

STRENGTH
Stable multi-year output

STRENGTH
Positive funded research entry in 2026

GAP / RISK
Consultancy not visible in source summary

GAP / RISK
Industry collaboration can be broadened

Improvement flow

1. Target sponsored projects in energy systems
2. Convert publications to prototypes
3. Expand industrial testing and consultancy

Department outlook

Overall outlook: A stable research core in thermal-fluid systems, materials, and manufacturing. The department shows a healthy publication base and a positive funded-project signal in 2026.

Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

SELECTED RESEARCH PAPERS

2026 Comparative CFD analysis of heat transfer enhancement using NACA0021 and NACA2421 aerofoil inserts
Prof. Rohit Jadhao • Energy Sources Part A

2025 A chronological review of heat transfer enhancement using inserts in channel flows
Prof. Rohit Jadhao • Physica Scripta

2024 Numerical investigation of FGMs with discontinuities under localized loadings
Dr. Mishra Kundan • Mechanics Based Design of Structures and Machines

2023 Estimation and analysis of exergy loss — marine freshwater generating system
Dr. Sapali S. N. • Journal of Thermal Engineering

RESEARCH OUTPUT TREND — MECHANICAL ENGINEERING

Computer Engg.

Computer Engineering

The highest-volume department in the consolidation, driven strongly by UGC-indexed output, plus journals, conferences, books, patents, and consultancy evidence.

AI | Security | Medical Imaging | Transport Analytics

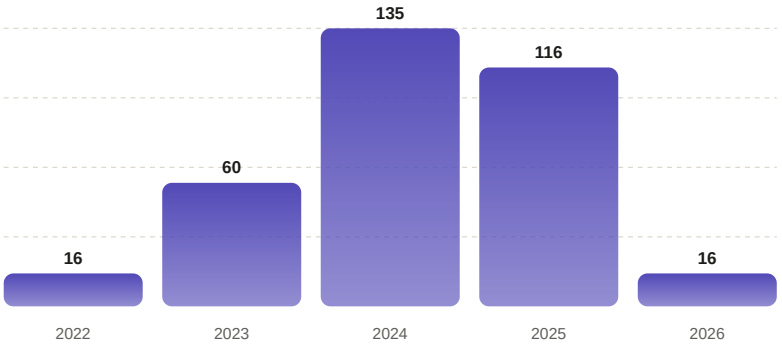
296 UGC	11 Scopus Journals
16 Conference Papers	AI Research Direction

2022	2023	2024	2025
16	60	135	116

Headline trend

YEAR-WISE RESEARCH OUTPUT

Higher bars indicate stronger annual activity.



Key takeaways

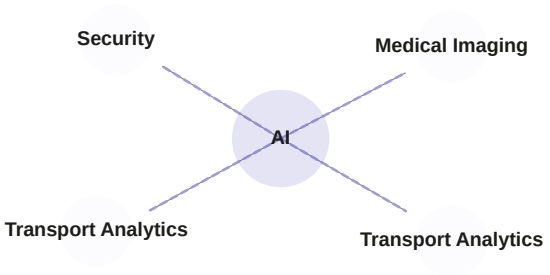
- Very high publication volume
- Broad research span across AI and engineering
- Consultancy activity visible in 2025

Representative evidence base

2026
The Virtual Healing Garden
Dr. Renuka S. Gound •
Lecture Notes in Networks and Systems

2023
Word Sense Disambiguation: Mathematical Modelling of Adaptive Word Embedding Technique
Dr. Chandrakant Kokane •
Journal of Interdisciplinary Mathematics

Concept map

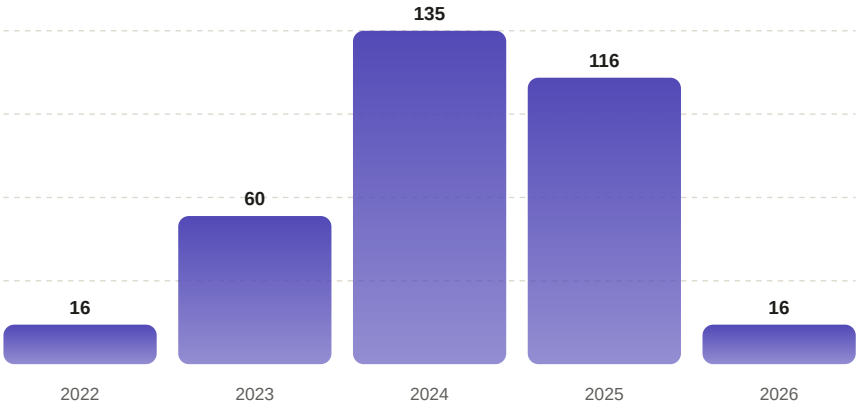


DEPARTMENT RESEARCH PUBLICATIONS

2026	The Virtual Healing Garden	Dr. Renuka S. Gound • Lecture Notes in Networks and Systems
2024	Medical Image Encryption Using Hybrid Adaptive ECC and Logistic Map-Based DNA Sequence in IoT	Prof. Rohini Hanchate • IETE Journal of Research
2023	Machine Learning for Intelligent Transport System in IoV-Based Vehicular Network for Smart Cities	

COMPUTER ENGINEERING RESEARCH TREND

Annual output plotted from the source summary.



Interpretive note

The graph reflects the department's publication-heavy identity and its continued strength through 2025.

Category balance

UGC / Research Outputs	296
Scopus Journals	11
Conferences	16
Books/Chapters	10
Patents	9
Consultancy	2

Research identity

- AI
- Security
- Medical Imaging
- Transport Analytics

Annual interpretation

- 2022 starts the cycle with an early baseline.
- 2025 and 2026 show the latest trend direction.
- The department uses a mix of publication, IP, and applied outputs.

RESEARCH CATEGORY BALANCE

UGC Papers	296
Scopus Journals	11
Conferences	16
Book Chapters	10
Patents	9

YEAR-ALIGNED PUBLICATIONS

2025 **Enhancing Diagnostic Accuracy: A Hybrid Approach to Mitigate Speckle and Rician Noise in Medical Images**
Dr. Saurabh Saoji • Advances in Nonlinear Variational Inequalities

2023 **Unraveling Complexity — Applications of Nonlinear Analysis in Signal Processing and Communication**
Dr. Chandrakant Kokane • Advances in Nonlinear Variational Inequalities

2024 **Assessment Of Bitumen Paver And HMP Efficiency For A Road Project**
Prof. Pritam Ahire • Panamerican Mathematical Journal

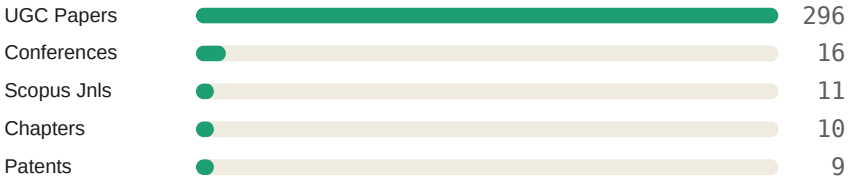
Selected representative publications

YEAR	FACULTY / AUTHOR	TITLE	VENUE / JOURNAL
2026	Dr. Renuka S. Gound	The Virtual Healing Garden	Lecture Notes in Networks and Systems
2023	Dr. Chandrakant Kokane	Word Sense Disambiguation: Mathematical Modelling of Adaptive Word Embedding Technique	Journal of Interdisciplinary Mathematics
2024	Prof. Rohini Hanchate	Medical Image Encryption Using Hybrid Adaptive ECC and DNA Sequence	IETE Journal of Research
2025	Dr. Saurabh Saoji	Enhancing Diagnostic Accuracy: A Hybrid Approach to Mitigate Noise in Medical Images	Advances in Nonlinear Variational Inequalities

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

CE OUTPUT CATEGORY BREAKDOWN



What the evidence suggests

- Quality-balance can be strengthened
- Sponsored projects and MoUs remain limited
- Very high publication volume

Evidence cards

2024
Medical Image Encryption Using Hybrid Adaptive ECC and DNA Sequence
Prof. Rohini Hanchate • IETE Journal of Research

2025
Enhancing Diagnostic Accuracy: A Hybrid Approach to Mitigate Noise in Medical Images
Dr. Saurabh Saoji •
Advances in Nonlinear Variational Inequalities

2022
Word Sense Disambiguation: A Supervised Semantic Similarity Based Complex Network Approach
Dr. Chandrakant Kokane •
Int. Journal of Intelligent Systems

2023
Unraveling the Complexity: Applications of Nonlinear Analysis in Signal Processing
Dr. Chandrakant Kokane •
Advances in Nonlinear Variational Inequalities

2024
Assessment of Bitumen Paver and HMP Efficiency for a Road Project
Prof. Pritam Ahire •
Panamerican Mathematical Journal

CE CATEGORY BREAKDOWN

UGC Papers	296
Scopus Journals	11
Conferences	16

Strength / risk framing

STRENGTH
Very high publication volume

STRENGTH
Broad research span across AI and engineering

STRENGTH
Consultancy activity visible in 2025

GAP / RISK
Quality-balance can be strengthened

GAP / RISK
Sponsored projects and MoUs remain limited

Improvement flow

1. Rebalance volume with high-indexed outputs
2. Build patent-to-prototype pipelines
3. Expand sponsored project ecosystem

SELECTED RESEARCH PAPERS

2026 The Virtual Healing Garden
Dr. Renuka S. Gound • Lecture Notes in Networks and Systems

2024 Medical Image Encryption Using Hybrid Adaptive ECC and Logistic Map-Based DNA Sequence in IoT
Prof. Rohini Hanchate • IETE Journal of Research

2023 Machine Learning for Intelligent Transport System in IoV-Based Vehicular Network for Smart Cities
Dr. Chandrakant Kokane • Int. Journal of Intelligent Systems

2025 Hybrid Approach to Mitigate Speckle and Rician Noise in Medical Images
Dr. Saurabh Saoji • Advances in Nonlinear Variational Inequalities

Department outlook

Overall outlook: The highest-volume department in the consolidation, driven strongly by UGC-indexed output, plus journals, conferences, books, patents, and consultancy evidence.

Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

RESEARCH OUTPUT TREND – COMPUTER ENGINEERING

CSE

Computer Science & Engineering

AI- and data-driven growth with strong conference and Scopus journal activity. The department covers healthcare, agriculture, surveillance, NLP, and recommender systems.

AI/ML | Healthcare | Agriculture | NLP

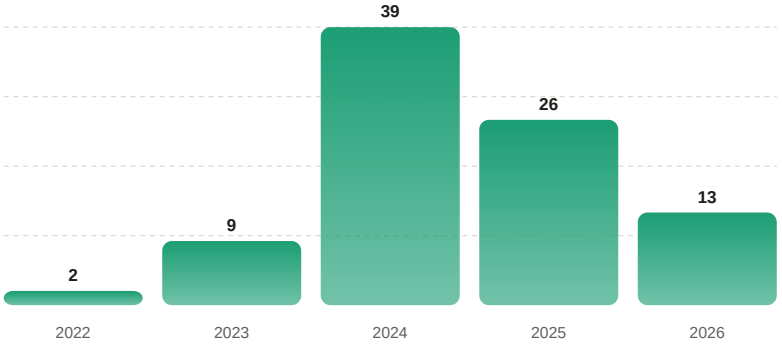
7 SCI/WOS	29 Scopus Journals
39 Conferences	AI/ML Research Direction

2022	2023	2024	2025
2	9	39	26

Headline trend

YEAR-WISE RESEARCH OUTPUT

Higher bars indicate stronger annual activity.



Key takeaways

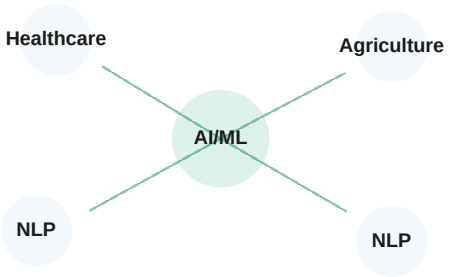
- Strong AI/ML momentum
- Balanced across journals and conferences
- One funded project appears in 2026

Representative evidence base

2026
Hybrid CNN-Transformer for Grape Leaf Disease Classification
Dr. Mahesh P. Wankhade •
ES Food and Agroforestry

2026
Artificial protozoa lotus effect algorithm enabled cognitive brain optimal model
Dr. Sanjeevkumar Angadi •
Computer Speech and Language

Concept map



DEPARTMENT RESEARCH PUBLICATIONS

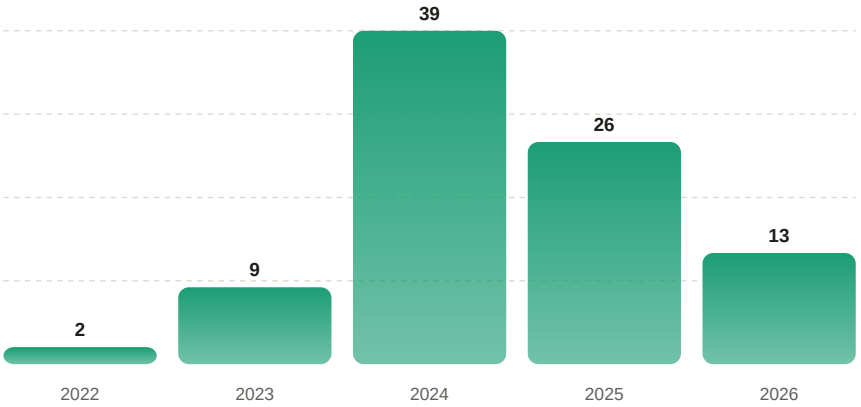
2026 **Hybrid CNN-Transformer Architecture with Gooseneck Barnacle Algorithm for Grape Leaf Disease Classification**
Dr. Mahesh P. Wankhade • ES Food and Agroforestry

2026 **SpinalCNN: spinal convolutional neural network based kidney cancer detection**
Shital Mehta • Biomedical Signal Processing and Control

2025 **Classification of animal species using efficient neuron attention stage by-**

COMPUTER SCIENCE & ENGINEERING RESEARCH TREND

Annual output plotted from the source summary.



Interpretive note

The 2024 peak marks the most productive year, followed by sustained active output in 2025 and 2026.

Category balance

SCI/WOS	7
Scopus Journals	29
Conferences	39
Book Chapters	6
Patents	7
Funded Projects	1

Research identity

- AI/ML
- Healthcare
- Agriculture
- NLP

Annual interpretation

- 2022 starts the cycle with an early baseline.
- 2025 and 2026 show the latest trend direction.
- The department uses a mix of publication, IP, and applied outputs.

RESEARCH CATEGORY BALANCE

Scopus Journals	29
Conferences	39
SCI/WOS	7
Book Chapters	6
Patents	7

YEAR-ALIGNED PUBLICATIONS

2026 **Artificial protozoa lotus effect algorithm for sentiment analysis utilizing multimodal data**
Dr. Sanjeevkumar Angadi • Computer Speech and Language

2025 **Hybrid deep learning system for crop disease classification using modified SegNet segmentation**
Mukesh Kumar Tripathi et al. • Computers and Electrical Engineering

2024 **Mathematical Modelling and Implementation of NLP for Prediction of Election Results**
S. K. Prasad et al. • Article

2026 **SpinalCNN: spinal convolutional neural network based kidney cancer detection**

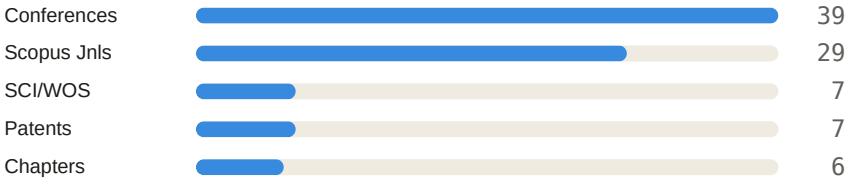
Selected representative publications

YEAR	FACULTY / AUTHOR	TITLE	VENUE / JOURNAL
2026	Dr. Mahesh P. Wankhade	Hybrid CNN-Transformer for Grape Leaf Disease Classification	ES Food and Agroforestry
2026	Dr. Sanjeevkumar Angadi	Artificial protozoa lotus effect algorithm enabled cognitive brain optimal model	Computer Speech and Language
2026	Shital Mehta	SpinalCNN: spinal convolutional neural network based kidney cancer detection	Biomedical Signal Processing and Control
2025	Mukesh Kumar Tripathi et al.	Hybrid deep learning system for crop disease classification using modified SegNet	Computers and Electrical Engineering

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

CSE OUTPUT CATEGORIES



What the evidence suggests

- Patent and funding counts are modest relative to volume
- MoUs and international conferences are not visible
- Strong AI/ML momentum

Evidence cards

2026
SpinalCNN: spinal convolutional neural network based kidney cancer detection
Shital Mehta •
Biomedical Signal Processing and Control

2025
Hybrid deep learning system for crop disease classification using modified SegNet
Mukesh Kumar Tripathi et al. •
Computers and Electrical Engineering

2024
Mathematical Modelling and Implementation of NLP for Prediction of Election Results based on Twitter
S. K. Prasad et al. • Article

2024
An NFMF-DBiLSTM model for human anomaly detection system in surveillance videos
Dr. Angadi • Article

2026
Artificial protozoa lotus effect algorithm enabled cognitive brain optimal model for sentiment analysis
Dr. Sanjeevkumar Angadi •
Computer Speech and Language

CSE CATEGORY SUMMARY

SCI/WOS	7
Scopus Journals	29

Strength / risk framing

STRENGTH
Strong AI/ML momentum

STRENGTH
Balanced across journals and conferences

STRENGTH
One funded project appears in 2026

GAP / RISK
Patent and funding counts are modest relative to volume

GAP / RISK
MoUs and international conferences are not visible

Improvement flow

1. Translate AI work into usable demonstrators
2. Expand grants and industry collaborations
3. Mentor early-career faculty teams

Department outlook

Overall outlook: AI- and data-driven growth with strong conference and Scopus journal activity. The department covers healthcare, agriculture, surveillance, NLP, and recommender systems.

Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

SELECTED RESEARCH PAPERS

2026 Hybrid CNN-Transformer Architecture with Gooseneck Barnacle Algorithm for Grape Leaf Disease Classification
Dr. Mahesh P. Wankhade • ES Food and Agroforestry

2026 SpinalCNN: spinal convolutional neural network based kidney cancer detection
Shital Mehta • Biomedical Signal Processing and Control

2025 Classification of animal species using efficient neuron attention stage by-stage network
Dr. Sanjeevkumar Angadi • Engineering Applications of AI

2024 HARNet in deep learning — a systematic survey
Dr. Sanjeevkumar Angadi • Scientific Reports

RESEARCH OUTPUT TREND

AI & DS

Artificial Intelligence & Data Science

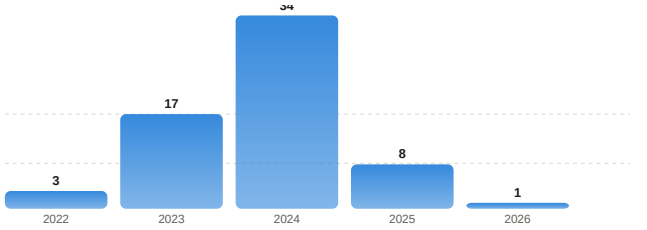
Rapid growth in 2024 — applied AI spanning infrastructure resilience, mobility, social impact, health analytics, and computer vision.

Infrastructure | Mobility | Health Analytics | Computer Vision

34	17	8
2024 Spike	2023 Growth	2025

3	17	34	8
2022	2023	2024	2025

YEAR-WISE RESEARCH OUTPUT



Key takeaways

- Major scaling event in 2024
- Applied and socially relevant themes
- Good mix of papers and IP-related activity

Representative publications

2025
Global Service Disruption and Infrastructure Resilience: AWS Outage Case Study
Koteswararao Seelam et al. • Indian Engineering Congress

2025
Rapid Expansion and Urban Mobility Transformation: India's Metro Network Growth
Koteswararao Seelam et al. • Indian Engineering Congress

MORE PUBLICATIONS

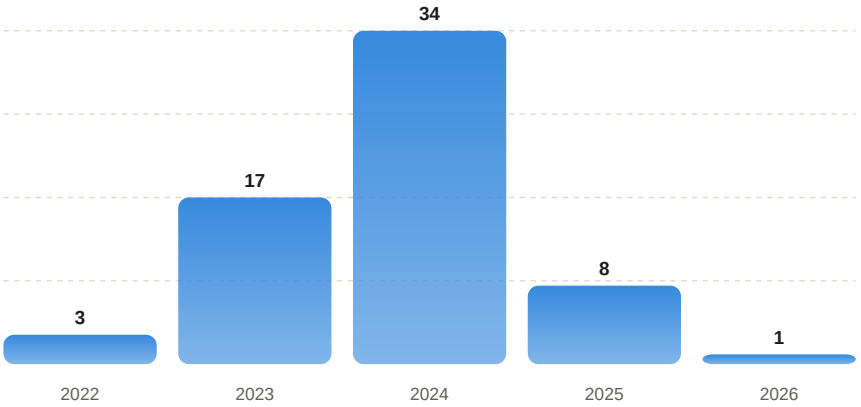
2026 **CSR funding patterns in India (2014-2025)**
Koteswararao Seelam • ICAIDISS 2026

2026 **Real-Time Detection of Barbell Lift Phases Using Enhanced YOLOv8**
Prof. Pranjali Bhalkar • IEEE / Scopus

2025 **Design and Development of Agribot for Automatic Seed Sowing**
IP India Filings • Patent Published

ARTIFICIAL INTELLIGENCE & DATA SCIENCE RESEARCH TREND

Annual output plotted from the source summary.



Interpretive note

The 2024 spike indicates fast scaling; the later dip suggests the need for stabilization and continuity.

Category balance

Google Scholar Papers	63
Patents / filings	1
Book chapters / outputs	1

Research identity

- Infrastructure
- Mobility
- Health Analytics
- Computer Vision

Annual interpretation

- 2022 starts the cycle with an early baseline.
- 2025 and 2026 show the latest trend direction.
- The department uses a mix of publication, IP, and applied outputs.

RESEARCH CATEGORY BALANCE

Google Scholar	63
Patents/Filings	1
Book Chapters	1

YEAR-ALIGNED PUBLICATIONS

2025 **Understanding Post-Disaster Queries Using Social Media Network Analysis and ML — Turkey Earthquake 2023**
Dr. RajaKumar • Springer Submitted

2026 **Predicting Problematic Internet Use in Children using quadratic weighted kappa and multimodal feature engineering**
Unknown author group • Scopus Submitted

2025 **Rapid Expansion and Urban Mobility Transformation — India's Metro Network Growth**
Koteswararao Seelam et al. • 40th Indian Engineering Congress

FEATURED PUBLICATIONS — YEAR-WISE CONTEXT

2026 **An empirical analysis of CSR funding patterns in India (2014–2025): From compliance to impact**
Koteswararao Seelam • ICAIDISS 2026

2026 **Real-Time Detection and Classification of Barbell Lift Phases Using Enhanced YOLOv8**

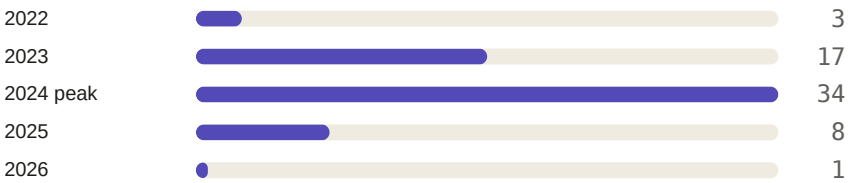
Selected representative publications

YEAR	FACULTY / AUTHOR	TITLE	VENUE / JOURNAL
2025	Koteswararao Seelam et al.	Global Service Disruption and Infrastructure Resilience: AWS Outage Case Study	Indian Engineering Congress
2025	Koteswararao Seelam et al.	Rapid Expansion and Urban Mobility Transformation: India's Metro Network Growth	Indian Engineering Congress
2026	Koteswararao Seelam	CSR funding patterns in India (2014-2025)	ICAIDISS 2026
2026	Prof. Pranjali Bhalkar	Real-Time Detection and Classification of Barbell Lift Phases Using Enhanced YOLOv8	IEEE / Scopus accepted

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

AI&DS ANNUAL OUTPUT TREND



What the evidence suggests

- 2025-26 output lower than 2024
- Long-term funded projects not emphasized
- Major scaling event in 2024

Evidence cards

2026
CSR funding patterns in India (2014-2025)
Koteswararao Seelam • ICAIDISS 2026

2026
Real-Time Detection and Classification of Barbell Lift Phases Using Enhanced YOLOv8
Prof. Pranjali Bhalkar • IEEE / Scopus accepted

2025
Global Service Disruption and Infrastructure Resilience: AWS Outage Case Study
Koteswararao Seelam et al. •
40th Indian Engineering Congress

2025
Understanding Post-Disaster Queries Using Social Media and ML — Turkey Earthquake 2023
Dr. RajaKumar • Springer Submitted

2025
Predicting Problematic Internet Use in Children using quadratic weighted kappa and multimodal feature engineering
Unknown author group • Scopus Submitted

AI&DS ANNUAL OUTPUT

2022	3 papers
2023	17 papers
2024	34 papers (peak)
2025	8 papers
2026	1 paper

Strength / risk framing

STRENGTH
Major scaling event in 2024

STRENGTH
Applied and socially relevant themes

STRENGTH
Good mix of papers and IP-related activity

GAP / RISK
2025-26 output lower than 2024

GAP / RISK
Long-term funded projects not emphasized

Improvement flow

1. Stabilize the growth curve
2. Build recurring research clusters
3. Strengthen patent-to-prototype pipelines

SELECTED RESEARCH PAPERS

2026 Empirical analysis of CSR funding patterns in India (2014–2025): From compliance to impact
Koteswararao Seelam • ICAIDISS 2026

2026 Real-Time Detection and Classification of Barbell Lift Phases Using Enhanced YOLOv8
Prof. Pranjali Bhalkar • IEEE/Scopus Accepted

2025 Understanding Post-Disaster Queries Using Social Media Network Analysis and ML — Turkey Earthquake 2023
Dr. RajaKumar • Springer Submitted

2025 Design and Development of Agribot for Automatic Seed Sowing Machine
IP India Filings • Patent Published

Department outlook

Overall outlook: Rapid growth, especially in 2024, with an applied AI portfolio that spans infrastructure resilience, mobility, social impact, health analytics, and computer vision.

Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

RESEARCH OUTPUT TREND

CSE (AI)

Computer Science & Engg. (AI)

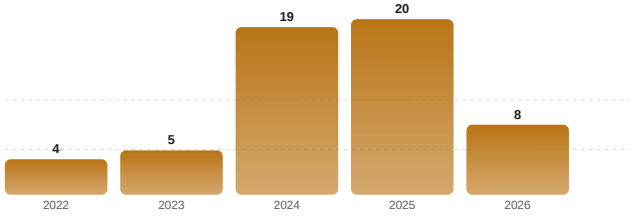
Well-rounded portfolio — medical imaging, wireless systems, and optimization. Consistent growth across 2024-25 with strong consultancy and patent presence.

Medical Imaging | Wireless Systems | Optimization | AI Methods

19	20	8
2024 Output	2025 Output	2026 Output

4	5	19	20
2022	2023	2024	2025

YEAR-WISE RESEARCH OUTPUT



Key takeaways

- Balanced across all core metrics
- Publication portfolio is coherent and thematic
- Consultancy and patents already present

Representative publications

2025
AI-driven detection and classification of diabetic retinopathy using EfficientNetB0
Dr. Prashant Ahire • Springer Nature / SCI

2025
Gray Wolf-Based Clustering for Enhanced Energy Efficiency in Wireless Sensor Networks
Dr. Dhanashree Kulkarni • Int. Journal of Communication Systems

MORE PUBLICATIONS

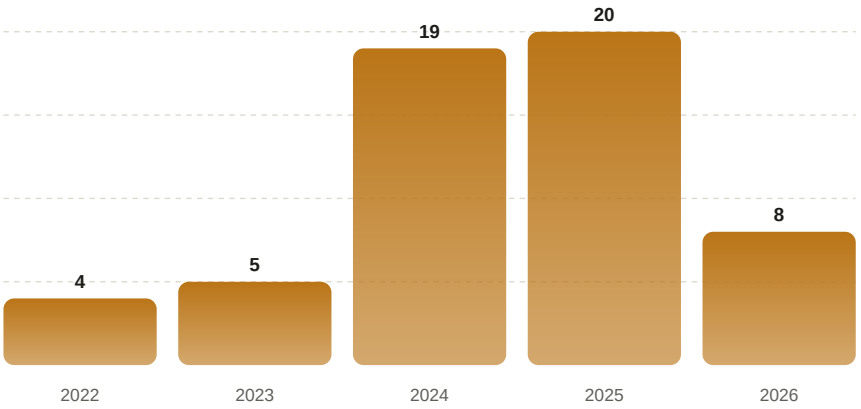
2025 **Transfer learning optimization in medical imaging with limited data sets**
Mrs. Sarita Charkha • Journal of Information and Optimization Sciences

2025 **Adversarial measurements for CNN-based energy theft detection in smart grid**
Dr. Sagar Shinde • e-Prime

2024 **Brief survey on human activity recognition using motor imagery of EEG signals**
Mrs. Seema Mhalungkar • Electromagnetic Biology and Medicine

COMPUTER SCIENCE & ENGINEERING (ARTIFICIAL INTELLIGENCE) RESEARCH TREND

Annual output plotted from the source summary.



Interpretive note

Balanced growth is visible, especially from 2024 onward, with conference activity peaking in 2025.

Category balance

SCI/WOS	6
Scopus Journals	18
Conferences	27
Book Chapters	1
Patents	3
Consultancy	1

Research identity

- Medical Imaging
- Wireless Systems
- Optimization
- AI Methods

Annual interpretation

- 2022 starts the cycle with an early baseline.
- 2025 and 2026 show the latest trend direction.
- The department uses a mix of publication, IP, and applied outputs.

RESEARCH CATEGORY BALANCE

Scopus Journals	18
Conferences	27
SCI/WOS	6
Patents	3
Consultancy	1

YEAR-ALIGNED PUBLICATIONS

2024 **A brief survey on human activity recognition using motor imagery of EEG signals**
Mrs. Seema Mhalungkar • Electromagnetic Biology and Medicine

2023 **Compiler Optimization Prediction with New Self-Improved Optimization Model**
Dr. Sagar Shinde • IJACSA

2025 **Device-to-Device Wireless Communication Using Blockchain and Onion Routing**
Dr. Sagar Shinde • IJCNA

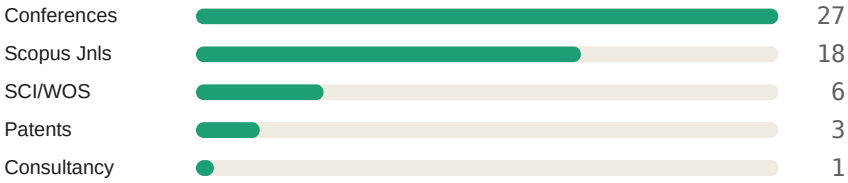
Selected representative publications

YEAR	FACULTY / AUTHOR	TITLE	VENUE / JOURNAL
2025	Dr. Prashant Ahire	AI-driven detection and classification of diabetic retinopathy stages using EfficientNetB0	Springer Nature / SCI
2025	Dr. Dhanashree Kulkarni	Gray Wolf-Based Clustering for Enhanced Energy Efficiency in Wireless Sensor Networks	International Journal of Communication Systems
2025	Mrs. Sarita Charkha	Transfer learning optimization in medical imaging enhancing diagnostic accuracy	Journal of Information and Optimization Sciences
2024	Mrs. Seema Mhalungkar	A brief survey on human activity recognition using motor imagery of EEG signals	Electromagnetic Biology and Medicine

Notable pattern

The titles repeatedly point to applied AI, optimization, security, healthcare, and domain-specific engineering problems. This alignment converts faculty expertise into visible scholarly outcomes.

CSE(AI) OUTPUT CATEGORIES



What the evidence suggests

- 2026 SCI/WOS dip should be monitored
- Funding and MoUs can be strengthened
- Balanced across all core metrics

Evidence cards

2025
Transfer learning optimization in medical imaging enhancing diagnostic accuracy
Mrs. Sarita Charkha •
Journal of Information and Optimization Sciences

2024
A brief survey on human activity recognition using motor imagery of EEG signals
Mrs. Seema Mhalungkar •
Electromagnetic Biology and Medicine

2022
A Novel Prediction Model for Compiler Optimization with Hybrid Meta-Heuristic Optimization Algorithm
Dr. Sagar Shinde • IJACSA

2023
Compiler Optimization Prediction with New Self-Improved Optimization Model
Dr. Sagar Shinde • IJACSA

2024
A brief survey on human activity recognition using motor imagery of EEG signals
Mrs. Seema Mhalungkar •
Electromagnetic Biology and Medicine

CSE(AI) CATEGORY SUMMARY

SCI/WOS	6
Scopus Journals	18
Conferences	27
Patents	3

Strength / risk framing

STRENGTH
Balanced across all core metrics

STRENGTH
Publication portfolio is coherent and thematic

STRENGTH
Consultancy and patents are already present

GAP / RISK
2026 SCI/WOS dip should be monitored

GAP / RISK
Funding and MoUs can be strengthened

Improvement flow

1. Keep publication quality high
2. Broaden collaborations around healthcare AI
3. Convert balanced growth into larger projects

Department outlook

Overall outlook: A well-rounded profile with balanced SCI/WOS, Scopus journals, conference papers, patents, and consultancy. The 2024-25 period shows especially healthy momentum.

Accreditation relevance

- Visible continuity matters for NBA/NAAC evidence.
- Balanced output is stronger when paired with funded work.
- Department identity becomes easier to document when themes are coherent.

One-line conclusion

The department contributes meaningfully to the institute's research culture and provides a foundation for future accreditation-ready evidence.

SELECTED RESEARCH PAPERS

2025 **AI-driven detection and classification of diabetic retinopathy stages using EfficientNetB0**
Dr. Prashant Ahire • Springer Nature / SCI

2025 **Gray Wolf-Based Clustering for Enhanced Energy Efficiency in Wireless Sensor Networks**
Dr. Dhanashree Kulkarni • Int. Journal of Communication Systems

2025 **Transfer learning optimization in medical imaging with limited data sets**
Mrs. Sarita Charkha • Journal of Information and Optimization Sciences

2025 **Adversarial measurements for CNN-based energy theft detection in smart grid**
Dr. Sagar Shinde • e-Prime

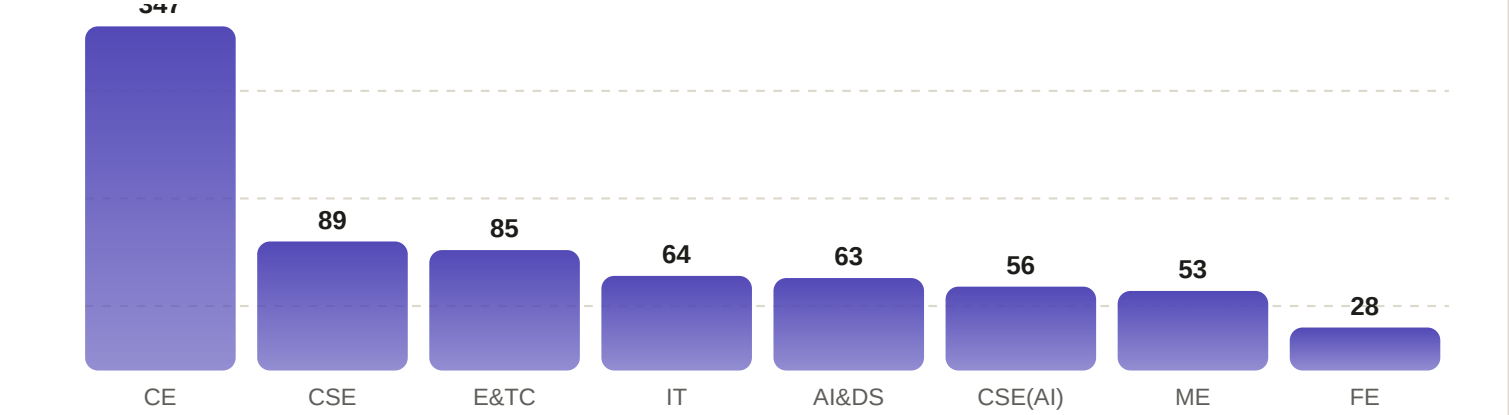
RESEARCH OUTPUT TREND

COMPARATIVE ANALYSIS

Output volume and research maturity at a glance

CE leads in volume; IT, E&TC, CSE, and CSE(AI) combine stronger balance with thematic coherence.

REPORTED ANNUAL OUTPUT MEASURE — ALL DEPARTMENTS



Comparative table

DEPARTMENT	MEASURE	INTERPRETATION
Computer Engineering	347	Highest volume; quality-balance needed
E&TC	85	Diversified and application-led
CSE	89	Strong AI/ML focus, active conferences
IT	64	Balanced and mature; strong IP mix
AI & DS	63	Fast-growing applied AI profile
CSE (AI)	56	Well-rounded and steady
Mechanical	53	Stable and technically deep
First Year	28	Emerging and gradually building

Strategic priorities

1. Common R&D dashboard
2. Sponsored projects & consultancy
3. Patent-to-prototype conversion

Institutional takeaway

IT, E&TC, CSE, and CSE(AI) best combine volume with quality and impact.

"An investment in knowledge pays the best interest."

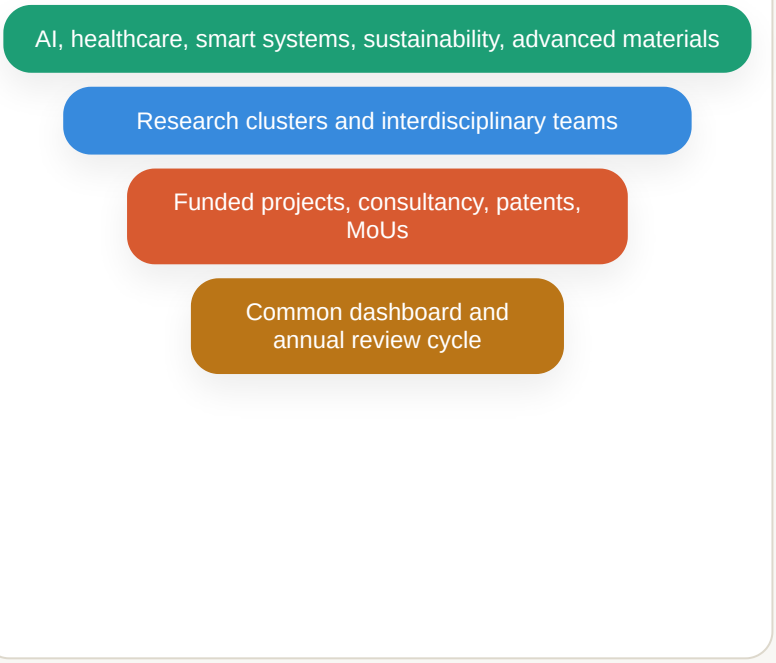
— Benjamin Franklin

QUALITY INDEX BY DEPT

INSTITUTIONAL ROADMAP & CSE(AI) RESEARCH EVIDENCE

Coordinated research system + representative outputs

Shared dashboards, industry linkages and measurable impact — paired with CSE(AI) publication evidence.



Roadmap flow

1. Shared metrics
2. Research clusters
3. Industry linkages
4. Sponsored projects
5. Higher visibility

Next-step priorities

- Use student projects as a pipeline to publishable work.
- Create thematic groups around AI, healthcare, and materials.
- Track funded projects, MoUs and patents with journal counts.

CSE(AI) REPRESENTATIVE PUBLICATIONS — CARRIED FROM PAGE 34

2025 PUBLICATIONS

2025 **Gray Wolf-Based Clustering for Enhanced Energy Efficiency in WSN**
Dr. Dhanashree Kulkarni • Int. Journal of Communication Systems

2025 **Transfer learning optimization in medical imaging with limited data**
Mrs. Sarita Charkha • Journal of Information and Optimization Sciences

2023–24 PUBLICATIONS

2023 **Compiler Optimization Prediction with Self-Improved Optimization Model**
Dr. Sagar Shinde • IJACSA

2025 **Device-to-Device Wireless Communication Using Blockchain and Onion Routing**
Dr. Sagar Shinde • IJCNA

> *"In the age of AI, the competitive advantage lies in creativity."*
> — Andrew Ng

CSE(AI) KEY NUMBERS

20	56	27
2025 Peak	Total	Conferences

CONSOLIDATED TABLES AND APPENDIX A

Department-wise headline metrics

This compact institutional snapshot provides an at-a-glance summary for quick review and internal tracking.

DEPARTMENT	HEADLINE METRIC	KEY OBSERVATION
IT	33 publications, 6 patents, 21 copyrights	Strong and diversified research profile
First Year	Google Scholar papers rise to 11 in 2025	Early-stage growth
E&TC	16 SCI/WOS, 40 Scopus journals, 12 patents	Broad and mature
Mechanical	15 SCI/WOS, 23 Scopus journals, 2 funded projects	Stable core
Computer Engineering	296 UGC papers, 16 conferences, 10 chapters	Very high volume
CSE	89 total outputs	AI/ML-heavy
AI & DS	34 papers in 2024	Rapid growth
CSE(AI)	Balanced across all categories	Well-rounded

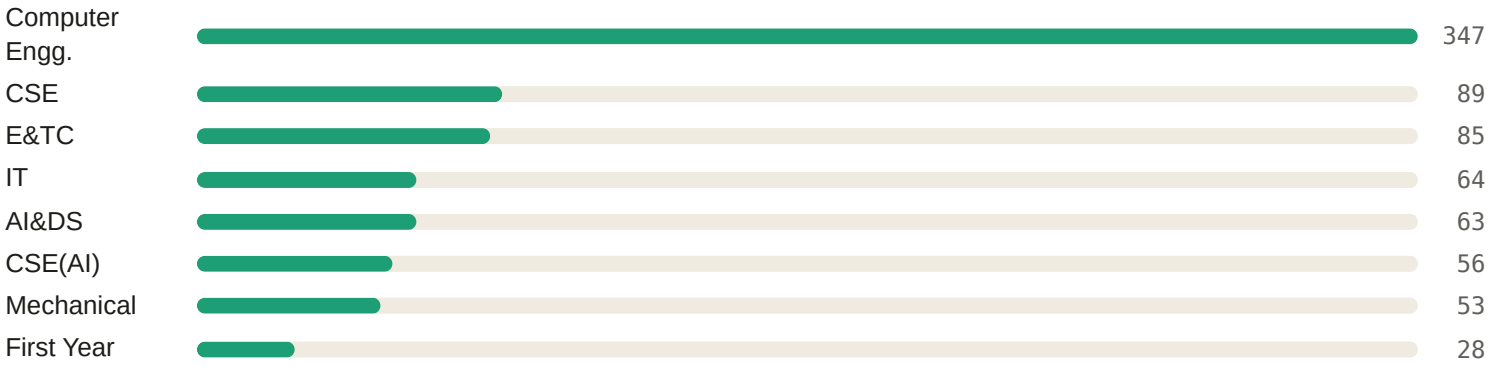
8
Total departments

CE
High-volume unit

AI & DS
Fast scaling

CSE(AI)
Most balanced

DEPT OUTPUT VOLUME — ALL DEPARTMENTS



REPRESENTATIVE PAPERS — IT & MECHANICAL

2024-25 Assessment of Bitumen Paver and HMP Efficiency for a Road Project
Dr. Prasad Dhore • Panamerican Mathematical Journal

SOURCE SYNTHESIS AND APPENDIX B

Documents used in the consolidation

Source list

- Consolidated department R&D reports across IT, FE, E&TC, Mechanical, CE, CSE, AI & DS, and CSE(AI).
- R&D lab member board used for front-page identity and governance confirmation.
- Interpretation remains conservative where the source tables were visually ambiguous or partially truncated.

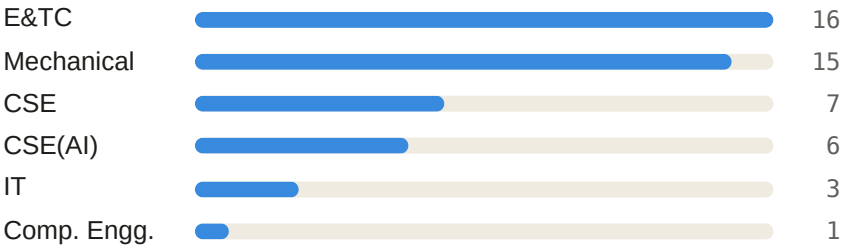
Interpretation note

All counts were interpreted directly from the source files, and the report avoids inventing missing values when the source visuals were incomplete.

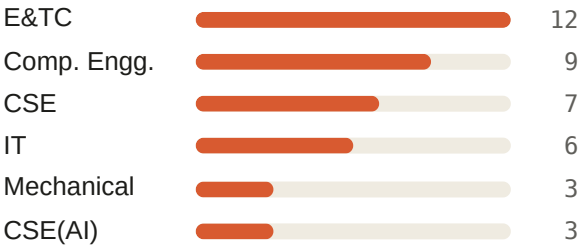
Document stack

- Department report synthesis
- Representative output extraction
- Annual trend interpretation
- Institutional roadmap and conclusion
- NBA/NAAC-style framing
- Concise evidence and interpretive notes
- Action-oriented improvement recommendations

SCI/WOS PUBLICATIONS BY DEPARTMENT



PATENT COUNT BY DEPARTMENT



REPRESENTATIVE PAPERS — CSE & E&TC

2026 Artificial protozoa lotus effect algorithm enabled cognitive brain optimal model for sentiment analysis
Dr. Sanjeevkumar Angadi • Computer Speech and Language

2025 Hybrid deep learning system for crop disease classification using modified SegNet segmentation
Dr. Mahesh P. Wankhade • Computers and Electrical Engineering

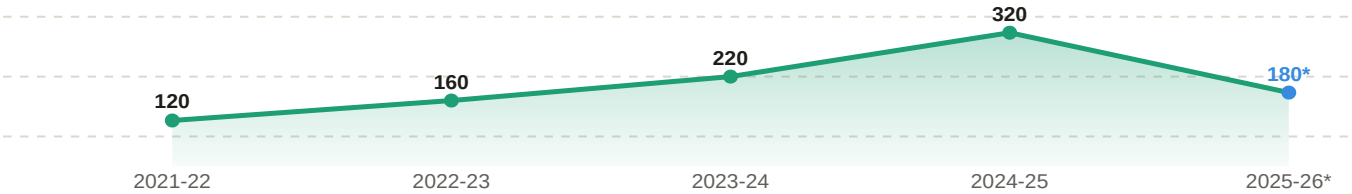
R&D GOVERNANCE BOARD

Members of the R&D Lab

The governance board page expanded for easy review, printing, and archiving.

Dr. Pramod Patil Director	**Dr. Vilas Deotare** Dean R&D	**Dr. Digvijay Patil** Associate Dean R&D	
Prof. Rupali Kaldoke CE	**Prof. Sujit Chaudhari** CSE	**Prof. Sarika B. Patil** E&TC	**Prof. Ravindra Gahane** E&TC
Dr. Anuj Khond Mechanical	**Dr. Koteswararao Seelam** AI&DS	**Ms. Dipika Paranjape** CSE AI	**Dr. Aniruddh Dubal** First Year
Dr. Vivek Nagargoje IT	**Dr. Asmat Ara Shaikh** MBA	**Prof. Saransh Kushwaha** MCA	

5-YEAR RESEARCH TRAJECTORY — ALL DEPARTMENTS



* 2025-26 partial year — estimated consolidated outputs.

ANNUAL R&D GOVERNANCE CYCLE

① Report → ② Track → ③ Review → ④ Update → ⑤ Plan Next

11	3	8
R&D Coordinators	Leadership Roles	Departments

"Coming together is a beginning; keeping together is progress; working together is success."

— Henry Ford

PROFESSIONAL CONCLUSION

A research ecosystem ready for its next stage

From research participation to research leadership — strong publication culture, growing patents, applied AI across all departments.

INSTITUTIONAL RESEARCH IMPACT — AT A GLANCE

Total Research Outputs	785+ across 8 departments	Patents & IP	60+ filed, published, or granted	Dominant Theme	Applied AI — 6 of 8 departments
SCI/WOS Publications	50+ in premier indexed databases	Research Funding	₹31 Lakh+ in visible projects	Next Priority	Funded projects + Industry MoUs

Motivational note

The most important next step is institutional consolidation — shared dashboards, funded projects, industry collaboration, and measurable impact pathways.

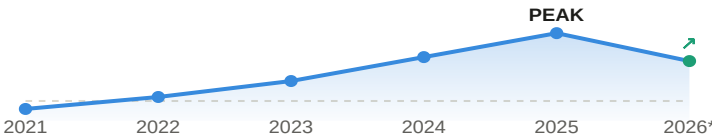
Closing statement

With that shift, the existing publication base can translate into stronger accreditation evidence, greater visibility, and a higher long-term research reputation.

Three-year aspiration

- Raise the share of externally funded projects.
- Convert strong themes into prototypes and deployable systems.
- Document the research story as a visible institutional strength.

PUBLICATION GROWTH TREND — ALL DEPTS



"The secret of getting ahead is getting started."

— Mark Twain

NMIET's research output grew over **6× in 5 years** — from ~120 outputs in 2021-22 to 320+ in 2024-25.

CROSS-CUTTING THEMATIC MATRIX

What the institute is really researching

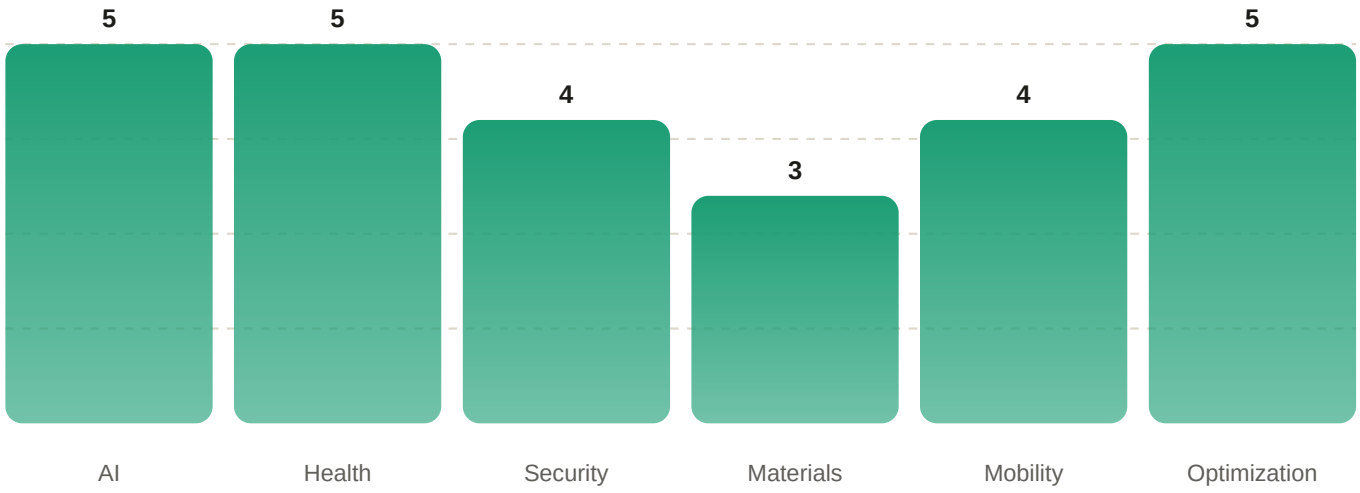
Across the departments, the most visible common themes are applied AI, healthcare, communication systems, smart mobility, materials, and optimization. This page turns those themes into a simple institutional map.

AI / ML
IT, CSE, CSE(AI), AI & DS, E&TC
Healthcare
IT, E&TC, CSE, CSE(AI), Computer Engineering
Security & Privacy
IT, E&TC, CE, CSE, CSE(AI)
Materials / Physics
First Year, Mechanical
Mobility / Smart Cities
CSE, AI & DS, E&TC, CE
Optimization
All major departments with especially strong presence in CSE, CSE(AI), E&TC, and Mechanical

Institutional research silhouette

THEME INTENSITY (QUALITATIVE)

A simple visual reading of the cross-department focus areas.



NMIET R&D Magazine

INNOVATE • RESEARCH • TRANSFORM

A structured institutional record of research growth, thematic identity, and future-ready development.

AI | Healthcare | Smart Systems | Materials | Optimization

Prepared from the department-wise reports and the R&D lab member board.