



Adi Shankara

INSTITUTE OF ENGINEERING AND TECHNOLOGY, KALADY

Approved by AICTE & Affiliated to APJ Abdul Kalam Technological University

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RESEARCH CELL

CONSOLIDATED ANNUAL REPORT ON RESEARCH ACTIVITIES

ACADEMIC YEAR 2025-2026

This report consolidates the departmental “Report on Research Activities (AY 2025-2026)” returns submitted by ten academic departments of Adi Shankara Institute of Engineering and Technology (ASIET), Kalady — Civil Engineering; Mechanical Engineering; Electrical and Electronics Engineering; Electronics and Communication Engineering; Computer Science and Engineering; Electronics and Biomedical Engineering; Robotics and Automation; the Department of Computer Applications (MCA); the Department of Management Studies (MBA); and Basic Science and Humanities.

1. Institutional Overview

1.1 Research Cell Members and Coordinators

Sl. No	Composition	Nature of selection	Name	Email-ID
1.	Convener	Dean Research	Dr.Sreepriya S	deanresearch@adishankara.ac.in
2.	Member	IQAC Head & Dean PhD	Dr. Bobby Mathews C	iqachead@adishankara.ac.in deanphd@adishankara.ac.in
3.	Core team members	ECE	Dr. Resmi N C	resmi.ec@adishankara.ac.in
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5.	Member	PG Dean	Dr. Bipin P R	bipin.ec@adishankara.ac.in
6.	Member	UG Dean	Dr. Jithesh K	deanug@adishankara.ac.in
7.	Member	CE	Dr. Parameswaran T G	parameswaran.ce@adishankara.ac.in
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10.	Member	EBE	Dr. Surya D	surya.eb@adishankara.ac.in
11.	Member	ME	Dr. Vinay Varghese, ME	vinay.me@adishankara.ac.in
12.	Member	BSH	Dr. Akhila Das	Akhila.neng@adishankara.ac.in
13.	Member	CSE	Dr. Deepa Devassy	deepad.cs@adishankara.ac.in
14.			Dr. Sreedevi R Krishnan	sreedevi.cs@adishankara.ac.in
15.	Member	CSE(AI)	Dr. Amrutha M Nair	amrutha.cs@adishankara.ac.in

16.	Member	CSE(DS)	Dr. Siji Jose Pulluparambil	siji.cs@adishankara.ac.in
17.	Member	RA	Dr. Athira M	athiram.ra@gmail.com
18.	Member	MBA	Dr. Shiny C M	drshiny2021@gmail.com
19.	Member	MCA	Smt. Rintu Augustine	rintu.cs@adishankara.ac.in

1.3 Departments

- Civil Engineering
- Mechanical Engineering
- Electrical and Electronics Engineering (EEE)
- Electronics and Communication Engineering (ECE)
- Computer Science and Engineering (CSE)
- Electronics and Biomedical Engineering (EBE)
- Robotics and Automation (R&A)
- Department of Computer Applications (MCA)
- Department of Management Studies (MBA)
- Basic Science and Humanities (BSH)

2. Faculty Research Profile

The table below consolidates the number of faculty members who reported an active area of research, department-wise (Section I of departmental reports).

Department	Faculty Reporting Research Areas	Representative Research Domains
Civil Engineering	10	Water resources engineering, concrete technology, geo-environmental and geotechnical engineering, hydrodynamic modelling, structural, environmental, and transportation engineering
Mechanical Engineering	15	Manufacturing, additive manufacturing, welding and coatings, thermal and fluids engineering, optimisation, CFD, robotics, renewable energy
EEE	9	Power electronics, renewable energy, EV systems, power quality, high-voltage engineering, robotics and UAV control
ECE	22	VLSI design, wireless communication, IoT, machine learning, photonics, antenna design, signal and image processing
CSE	16	Deep learning, NLP, image processing, cybersecurity, bio-inspired computing, LLMs
EBE	7	Medical image processing, biomedical signal processing, nanoelectronics/biosensors, low-power VLSI for neural networks
Robotics & Automation	11	Computer vision in agriculture, robotic manipulators, soft computing/control, renewable energy conversion, power electronics, quantum computing applications
MCA	4	Digital image processing, data mining, AI/ML, blockchain
MBA	5	Behavioural finance, HR, marketing, entrepreneurship, information technology
BSH	6	Graph theory and optimisation, health economics, nanomaterials, stochastic processes, cultural studies
Institutional Total	105	

2.2 PhD Holders, Faculty Pursuing PhD, Research Supervisors/Guides, Recognised Research Centres

DEPTS	RESEARCH SUPERVISOR	PHD HOLDERS	FACULTY PURSUING PHD	PROFESSOR	ASSOCIATE PROFESSOR	ASSISTANT PROFESSOR
CIVIL	0	3	9	2	1	9
MECHANICAL	3	8	9	2	5	9
ELECTRICAL	1	4	9	2	5	8
ELECTRONICS AND COMMUNICATION	4	8	13	3	4	15
ELECTRONICS AND BIO MEDICAL	1	5	7	1	1	10
ROBOTICS AND AUTOMATION	1	5	6	1	3	8
COMPUTER SCIENCE AND ENGINEERING	0	5	20	2	3	25
COMPUTER SCIENCE AND ENGINEERING(AI)	0	3	6	1	2	8
COMPUTER SCIENCE AND ENGINEERING(DS)	0	2	3	0	0	6
MASTER OF COMPUTER APPLICATIONS	0	2	4	0	1	4
MASTER OF BUSINESS ADMINISTRATION	0	6	1	3	1	8
BASIC SCIENCE AND HUMANITIES	0	6	6	2	3	19

3. Publications

3.1 Journal Publications

A total of 38 journal publications were reported across departments for AY 2025-2026.

Department	Journal Publications
Civil Engineering	2
Mechanical Engineering	5
EEE	0
ECE	4
CSE	4
EBE	4
Robotics & Automation	2
MCA	3
MBA	6
BSH	4
Institutional Total	38

Indexing (as reported): the majority of journal publications carry Scopus, Web of Science, SCI, SCIE or ESCI indexing (reported for approximately 27 of the 38 titles), with the remainder indexed under UGC-listed, ABDC, or other national/institutional listings, or not specified. **Notable high-impact publications reported include:**

- Two Q1-indexed Scientific Reports/Multimedia Tools and Applications papers on real-time video-surveillance anomaly detection (CSE).
- Two papers in Geotechnical and Geological Engineering (Web of Science/Scopus) and Geotechnical Testing Journal, ASTM (SCI/Scopus) on soil dispersivity (Civil Engineering).
- Four SCIE-indexed papers including two in Scientific Reports and one in Materials Research Express and Journal of Materials Engineering and Performance (Mechanical Engineering).

- An SCI-indexed paper in the European Journal of Control on visual servoing for robotic manipulators (Robotics & Automation).
- An IET Blockchain (Scopus) paper on blockchain-based secure IoT data sharing (MCA).

3.2 Conference Publications

A total of 80 conference papers were reported across departments. The great majority were presented at IEEE-sponsored or IEEE-affiliated international conferences (e.g., ACCESS, ICSCC, ASIANCON, ICHCE, ICCPCT, ICSCSA, ICITEICS, ACROSET), with a smaller number at other national/international conferences (e.g., ICEAMT, ICIMRBE).

Department	Conference Papers
Civil Engineering	0
Mechanical Engineering	1
EEE	15
ECE	17
CSE	29 (2 duplicate listings of one paper removed)
EBE	5
Robotics & Automation	5
MCA	7
MBA	1
BSH	0
Institutional Total	80

3.3 Books and Book Chapters

Department	Count	Titles / Publisher
MBA	2	Fostering Circular Economy Entrepreneurship (MES College, Eduthala); Examining Employee Commitment... (Shanlax International Journal)
EEE	1	Textbook on Business Plan and Prototype Development for Engineering Entrepreneurship (ISBN 9788197301414)
MCA	3	Two Scopus-indexed book chapters (Springer Nature; Raedemics Research – 2 chapters) on blockchain, robotic path planning, and traffic-flow prediction
CSE	1	Empowering Educators for the Digital Age (IGI Global)
Institutional Total	7	

No book chapters or books were reported by Civil Engineering, Mechanical Engineering, ECE, EBE, Robotics & Automation, or BSH.

4. Intellectual Property Rights (IPR)

Department	Total Entries	Published	Applied/Filed	Granted
Civil Engineering	1	0	0	1 Granted
Mechanical Engineering	3	3	0	0
EEE	0	0	0	0
ECE	4	4	0	0
CSE	3	0	0	3 Granted
EBE	0	0	0	0
Robotics & Automation	4	1 Published, 1 Design	1 Filed	1 Granted
MCA	1	0	1 Filed	0
MBA	3	1 Published	2 Applied	0
BSH	0	0	0	0
Institutional Total	19	9 Published/Design	4 Applied/Filed	5 Granted

No copyrights, design registrations, or trademarks were separately reported by any department (design patent status is recorded within the patent entries above).

5. Sponsored Research Projects (Grants Received)

Title of Research Project	Principal Investigator	Funding Agency	Year	Amount	Type
Autonomous Amphibious Robot for Mapping and Surveillance using Robotic Operating System	Dr. Sreedeeep Krishnan	RSM – KTU	2024	₹1,28,500	Government
Discontinuous Pulse Code Modulation Scheme for BLDC Motor Drive	Dr. Jeeshma Mary Paul	RSM – KTU	2025	₹1,07,500	Government

Total institutional grant funding reported: ₹2,36,000, entirely from the KTU Research Seed Money (RSM) scheme.

6. Consultancy

No data reported by departments. None of the ten departmental submissions recorded consultancy projects, industry partners for consultancy, consultancy revenue, or outcomes.

7. Research Funding Proposals Submitted

Department	Proposals Submitted	Key Agencies
Civil Engineering	1	Department of Science and Technology, Govt. of India
Mechanical Engineering	1	ANRF
EEE	7	AICTE, ANRF, IKS/MoE, KSEBL, ANERT
ECE	0	–
CSE	0	–
EBE	3	ISRO-VSSC, IIT Palakkad iHub Foundation (2)
Robotics & Automation	0	–
MCA	0	–
MBA	3	IKS Research Projects, IKS Research Centre Programme, ISBM (Penn State)
BSH	2	Anusandhan National Research Foundation, IKS Division of MoE
Institutional Total	17	

8. Faculty Development Programmes, Workshops, Seminars and Conferences Organised

8.1 FDPs Organised

Department	FDP Title(s)	Participants	Dates
Civil Engineering	–	–	–
Mechanical Engineering	Green Hydrogen Energy & Circular Economy	87	16–22 Jun 2026
EEE	Sustainable Energy Systems and Smart Technologies: Bridging Academia and Industry	35	15–20 Jun 2026
ECE	Intelligent Sensor–IoT Frameworks Using Advanced Materials (MeitY-funded)	27	15–20 Jun 2026
CSE	ATAL FDP: Advancements in Cloud and Edge Computing; TCS FEP: Industry Practices in Software Development	124; 66	5–10 Jan 2026; 15–20 Jun 2026
EBE	Exploring Medical Device Ecosystem: From Development to Regulations	110	22–27 Jun 2026
Robotics & Automation	Robotics Beyond Boundaries: from Programming to Autonomy	32	22–30 May 2026
MCA	AI-Powered Smart Campuses; Digital Tools for Lab Excellence	30; 30	29 Jun–3 Jul 2026; 20–25 Jun 2025
MBA	Mastering the Art of Research Paper Writing; Smart Academia	20; 80	9–10 Jun 2025/26; 20–22 May 2026
BSH	–	–	–

8.2 Conferences/Seminars Organised

- International Conference on Emerging Trends in Applied Science, Management and Technology (ICEAMT 2025), 31 Jul–1 Aug 2025 – jointly reported by MBA (91 participants) and BSH (90 participants).
- HR Conclave, 18 Mar 2026 (MBA, 232 participants).
- IEEE International Conference on Advances in Computing, Communication, Embedded and Secure Systems (ACCESS'25), 10–13 Jun 2025 (EEE, 145 participants).
- Seminar – “Designing a Fruitful Career in the AI Era,” 7 Apr 2026 (Robotics & Automation, 34 participants).

8.3 Workshops on Research Methodology, IPR, and Entrepreneurship

- Robotics & Automation organised seven technical workshops during the year (controller design, MATLAB-Simulink, microcontrollers/embedded systems, industrial automation, Arduino sensor interfacing, electronic product building, and ROS 2), reaching 42–57 participants per session.
- MCA organised an IPR workshop, “Protecting Ideas – Role of IPR in Modern Society,” on 24 Sep 2025 (115 participants).
- MBA reported a Research-Methodology FDP (counted in 8.1) and two entrepreneurship activities – a One Day Sale (22 Aug 2025) and an Entrepreneurship Conclave (14 Jan 2026), each with 232 participants.
- Research cell arranged a workshop on research writing on 18th May 2026, Dr Basil Kuriachen (NIT Calicut) was the resource person.

10. Innovation and Entrepreneurship

No dedicated IEDC, startup, incubation, or prototype-development activity was reported as such by any department. The following related activities were reported and are noted here for completeness:

- CSE: MOU with μ Learn Foundation supporting student-led activities including a hackathon (“Build With AI – 2026”) and a startup/demo event (“Mument 2.0 – Demo Day”).
- MBA: Entrepreneurship Conclave and a One Day Sale event (Section 8.3).

12. MoUs and Collaborations

Department	MOUs Reported	Partner Institutions / Purpose
Robotics & Automation	7	Srishti Robotics, SIEMENS Lab (NIT-T), Dimension Mechanix, RIOD Logic, SMEC Labs, Synro Robotics, Fuselage Innovation – internships, faculty/student training, placements, R&D
EEE	13	TNEI Services, Society of Energy Engineers and Managers, SMEC Automation, Techmaghi LLP, InQbe Innovations, MTTC International, RIOD Logic, Nest Institute of Fibre Optic Technology, CADD Campus, EQUINOCT, BEACON Energy Storage, Energy Conservation Society, Athul Energy Consultant – industry labs, expert talks, internships, training
MBA	3	Elanad Milk Pvt. Ltd. (internship/placement); PDDP Central Society, Kuttilakkara (industrial training/internship); Yuva (details not reported)
CSE	2	μ Learn Foundation (student community programmes/hackathons); Additional Skill Acquisition Programme (ASAP), Govt. of Kerala (internship, on-the-job training, research)
EBE	3	Indian Biomedical Skill Consortium; HORIBA India Pvt. Ltd.; Thritvam Integris Pvt. Ltd. – domain training, IVD instrumentation, medical-device exhibitions
Civil Engineering, Mechanical Engineering, ECE, MCA, BSH	0	No MOUs reported

14. Events Organised – Consolidated Summary

Across all departments, the institution reported organising 9 FDPs, 3 institution/department-level conferences, 1 seminar, and 9 workshops (7 technical workshops in Robotics & Automation, 1 IPR workshop in MCA, and research-

methodology/entrepreneurship sessions in MBA) during AY 2025-2026, engaging over 1,000 participant-instances in total (participation figures are per-event and may include repeat attendees across sessions).

15. Department-wise Research Highlights

Civil Engineering

- 10 faculty reporting active research; 2 journal publications, both in reputed indexed journals (Geotechnical and Geological Engineering – WoS/Scopus; Geotechnical Testing Journal, ASTM – SCI/Scopus), both by Dr. Parameswaran T G.
- 1 patent granted: “A method and device for quantitatively determining soil dispersivity” (Patent No. 592393).
- 1 research proposal submitted to the Department of Science and Technology, Govt. of India.

Mechanical Engineering

- 15 faculty reporting active research; 5 SCIE-indexed journal publications, largely in Scientific Reports and Materials Research Express.
- 3 patents published (all by Dr. Nidhin Raj A); 1 proposal submitted to ANRF on aerospace-grade additive-subtractive manufacturing.
- Organised an FDP on Green Hydrogen Energy & Circular Economy (87 participants).

Electrical and Electronics Engineering (EEE)

- 9 faculty reporting active research; 15 conference papers presented, concentrated in power electronics, EV charging, and grid-connected systems.
- 1 book/textbook published (Business Plan and Prototype Development for Engineering Entrepreneurship, ISBN 9788197301414).
- Largest MOU portfolio among departments (13 industry linkages) and 7 proposals submitted to AICTE, ANRF, IKS/MoE, ANERT and KSEBL.

Electronics and Communication Engineering (ECE)

- 22 faculty reporting active research – the largest faculty base among departments; 4 journal publications and 17 conference papers, the highest conference output of any single department.
- 4 patents published, covering water-distribution monitoring, student/victim safety devices, and IoT-enabled waste management.
- Organised a MeitY-funded FDP on Intelligent Sensor-IoT Frameworks Using Advanced Materials.

Computer Science and Engineering (CSE)

- 16 faculty reporting active research; highest volume of conference publications after deduplication (29), spanning computer vision, NLP, cybersecurity and healthcare AI, largely at IEEE conferences including ICIICE (Dubai).
- 3 patents granted (crowd-anomaly detection device, IoT air-pollution monitor, low-power cache-optimisation module).
- Active student-facing MOUs with μ Learn Foundation and ASAP (Kerala) supporting hackathons and skill programmes.

Electronics and Biomedical Engineering (EBE)

- 7 faculty reporting active research, all in biomedical/medical signal and image processing; 4 journal publications including a Q1 Scientific Reports paper on autism-related eye-tracking and a Q2 Neuropsychologia paper on early dementia detection.
- 3 proposals submitted, including to ISRO-VSSC (Paintable Solar Cell Technology) and IIT Palakkad iHub Foundation (2 proposals).

- 3 industry MOUs (Indian Biomedical Skill Consortium, HORIBA India, Thritvam Integrus) supporting biomedical-device training and exhibitions.

Robotics and Automation

- 11 faculty reporting active research; the only department reporting externally funded research grants – two KTU Research Seed Money awards totalling ₹2,36,000.
- 4 patent entries spanning published, design, granted and filed status, including a granted patent on variable-speed electric-motor control.
- Most extensive skills-development calendar: 1 FDP, 1 seminar and 7 technical workshops, plus 7 industry MOUs.

Department of Computer Applications (MCA)

- 4 faculty reporting active research; 3 Scopus-indexed journal publications and 3 Scopus-indexed book chapters (2 with Raedemics Research, 1 with Springer Nature).
- 1 patent filed (air-conditioning duct design); organised an IPR-awareness workshop (115 participants) alongside 2 FDPs.

Department of Management Studies (MBA)

- 5 faculty reporting active research; 6 journal publications spanning UGC-approved, ABDC and Scopus-indexed outlets, and 2 book chapters.
- 3 patent entries (1 published, 2 applied) and 3 proposals submitted, including to IKS Research Centre Programme and Penn State ISBM.
- Organised the International Conference on Emerging Trends in Applied Science, Management and Technology (ICEAMT 2025) and the HR Conclave (232 participants), alongside entrepreneurship-focused student events.

Basic Science and Humanities (BSH)

- 6 faculty reporting active research across graph theory, health economics, nanomaterials, stochastic processes and cultural studies.
- 4 journal publications, including work on health-insurance policy and green-synthesised nanomaterials; 2 proposals submitted (ANRF, IKS Division of MoE).
- Co-organised ICEAMT 2025 (90 participants) with the Department of Management Studies.

16. Institutional Research Statistics – Executive Summary

Indicator	Institutional Total (AY 2025-2026)
Faculty reporting active research areas	105
Grants received (count / amount)	2 / ₹2,36,000
Journal publications	38
Conference publications	80
Books/book chapters	7
Patents (all statuses)	19 (5 Granted, 9 Published/Design, 4 Applied/Filed)
Research proposals submitted	17
Consultancy projects	No data reported by departments
FDPs organised	9
Conferences/seminars organised	4
Research-methodology/IPR/entrepreneurship workshops organised	9
MOUs/industry linkages reported	28

17. Major Institutional Achievements

- 118 total publications (38 journal + 80 conference) reported across ten departments, with a significant share in Scopus/SCI/SCIE/Web-of-Science-indexed outlets.

- 19 patent entries reported institution-wide, including 5 granted patents (Civil Engineering, Robotics & Automation, and 3 in CSE).
- Two KTU Research Seed Money grants secured by the Department of Robotics and Automation, totalling ₹2,36,000.
- Faculty from CSE published at the IEEE International Conference on Integrated Intelligence and Cognitive Engineering (ICIICE 2026) held in Dubai, UAE, reflecting international research visibility.
- 9 Faculty Development Programmes organised across seven departments, several with external funding/sponsorship (MeitY, ATAL, TCS).
- 28 active MOUs with industry and research partners supporting internships, training and collaborative activity.

19. Recommendations

Short-Term (0–6 months)

- Grant Research Seed Money
- Consolidate and publicise the institution's patent-filing support process to help move more “Applied/Filed” patents toward grant.

Medium-Term (6–18 months)

- Extend research-methodology, IPR-awareness and entrepreneurship workshops to departments that did not organise any this year (Civil Engineering, EEE, ECE, CSE, EBE, BSH).
- Establish a formal mechanism to track and report consultancy engagements and their revenue at the departmental level.
- Encourage cross-departmental co-authored publications and joint proposal submissions.

Long-Term (18–36 months)

- Work toward establishing one or more recognised Centres of Excellence
- Strengthen student-research and innovation-cell (projects, hackathons, incubation, IEDC activity) to complement faculty-centred research.
- Target a measurable increase in externally funded sponsored projects across departments

research profile.