

ENTC

Department of Electronics and Telecommunication Engineering

INTELLIGENT CONNECTIVITY

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Intelligent Connectivity: Transforming the Digital Future

Intelligent Connectivity represents the convergence of advanced communication networks, artificial intelligence (AI), Internet of Things (IoT), and data-driven technologies to create smart, adaptive, and efficient systems. It is a key enabler of the Fourth Industrial Revolution (Industry 4.0), fundamentally reshaping how devices, systems, and humans interact in a highly connected world.

At its core, Intelligent Connectivity combines **high-speed communication technologies** such as 5G and upcoming 6G with **intelligent data processing** capabilities. Unlike traditional connectivity, which focuses merely on data transmission, intelligent connectivity emphasizes **context-aware, real-time decision-making** through AI and machine learning algorithms. This shift allows networks to not only transmit data but also analyze, learn, and respond dynamically.

Key Components of Intelligent Connectivity

1. 5G and Beyond Networks:

The rollout of 5G technology has significantly enhanced data speeds, reduced latency, and increased network reliability. These features are essential for applications like autonomous vehicles, remote surgeries, and smart cities. Future 6G networks aim to further integrate AI and provide ultra-low latency communication.

2. Internet of Things (IoT):

IoT connects billions of devices ranging from household appliances to industrial machinery. Intelligent connectivity enables seamless communication among these devices, leading to automation, predictive maintenance, and improved operational efficiency.

3. Artificial Intelligence (AI):

AI plays a crucial role by processing large volumes of data generated by connected devices. It helps in pattern recognition, anomaly detection, and decision-making, making systems more adaptive and intelligent.

4. Cloud and Edge Computing:

While cloud computing offers centralized data processing, edge computing brings computation closer to the data source. This reduces latency and ensures faster responses, which is critical for time-sensitive applications such as industrial automation and healthcare monitoring.

Applications and Impact

Intelligent Connectivity is revolutionizing multiple sectors:

- **SmartCities:**
Efficient traffic management, waste management, and energy optimization are achieved through interconnected sensors and AI-driven analytics.
- **Healthcare:**
Remote patient monitoring, telemedicine, and AI-assisted diagnostics are enhancing the quality and accessibility of healthcare services.
- **IndustrialAutomation:**
Smart factories utilize connected machines and predictive analytics to improve productivity and reduce downtime.
- **Education:**
Digital classrooms, virtual labs, and personalized learning platforms are made possible through high-speed, intelligent networks.
- **Agriculture:**
Precision farming techniques using IoT sensors and AI help in optimizing irrigation, monitoring soil health, and increasing crop yield.

Challenges and Considerations

Despite its transformative potential, Intelligent Connectivity faces several challenges:

- **Data Security and Privacy:**
The massive exchange of data increases the risk of cyber threats and privacy breaches.
- **Infrastructure Costs:**
Deployment of advanced networks and technologies requires significant investment.
- **Interoperability Issues:**
Ensuring seamless communication between diverse devices and platforms remains a challenge.
- **Skill Gap:**
There is a growing demand for professionals skilled in AI, networking, and data analytics.

Future Prospects

The future of Intelligent Connectivity lies in deeper integration of AI with communication networks. Technologies like **digital twins, extended reality (XR), and autonomous systems** will rely heavily on intelligent connectivity. As research progresses, the focus will shift towards **self-healing networks, energy-efficient communication, and secure data sharing mechanisms**.

In conclusion, Intelligent Connectivity is not just an advancement in communication technology but a paradigm shift that is enabling smarter, more efficient, and sustainable systems. Its adoption will continue to drive innovation across industries, making it a critical area of focus for researchers, engineers, and policymakers.

ABOUT THE DEPARTMENT

Established in 1999, the Department of Electronics and Telecommunication Engineering offers a B.Tech. program with an intake of 120 students and an M.Tech. program (E&TC) with 18 seats. The department follows Outcome-Based Education (OBE), ensuring a strong alignment between Program Outcomes (POs) and Program-Specific Outcomes (PSOs). It has been accredited by the NBA for four consecutive terms of three years each, reflecting sustained academic quality and excellence. The department is supported by 31 faculty members, including 20 Ph.D. holders. The department is equipped with 16 state-of-the-art laboratories & Ph.D. research Labs approved by SGB Amravati University, Amravati.

The department has developed robust infrastructure through initiatives such as the AICTE-funded Microprocessor, Microcontroller, and Embedded Systems laboratory under the MODROB scheme, along with a Centre of Excellence established in collaboration with PugArch Technologies. It actively promotes skill enhancement through continuous learning initiatives, industry collaborations, and hands-on training. With three active MoUs, students gain exposure to internships and live projects, preparing them for real-world challenges.

ABOUT THE INSTITUTE

Sipna College of Engineering & Technology (SCOET), established in July 1999, is committed to delivering quality professional education and nurturing future-ready engineers. Located in Amravati—an emerging educational hub of Maharashtra—the institute is approved by the All-India Council for Technical Education (AICTE), New Delhi, and affiliated with Sant Gadge Baba Amravati University, Amravati. Sipna COET is an autonomous, unaided engineering institution known for its academic excellence and quality standards. The institute is accredited by the National Assessment and Accreditation Council (NAAC) with an 'A+' grade and has five undergraduate programs accredited by the National Board of Accreditation (NBA). The institute is ISO 9001:2015 certified for its robust quality management system. Under the AICTE Margadarshan Scheme, Sipna COET has been recognized as a Mentor Institute by COEP Technological University, Pune. Additionally, the college is included under Sections 2(f) and 12(B) of the UGC Act, 1956. To strengthen industry–institute interaction and build a strong

rapport with industry, the institute holds membership of the Confederation of Indian Industry (CII).

The institute emphasizes strong industry interaction, innovative teaching-learning methodologies, and outcome-based education to equip students with essential skills and competencies. Further strengthening its commitment to emerging technologies, Sipna COET proudly hosts Vidarbha's first DGCA-authorised Remote Pilot Training Organisation (RPTO), providing specialized training in drone technology and contributing to skill development in the rapidly growing aviation sector.

Vision

To impart quality professional education for creating reputed technocrats and entrepreneurs to meet industry standards and requirements.

Mission

To create quality education towards professional excellence.

To imbibe advanced knowledge in applied areas of engineering and technology.

To remain updated with contemporary technology and develop managerial skills.

To technical expertise along with professional ethics as per societal needs

Programme Educational Objectives

PEO.1: The Graduates shall acquire the fundamental and advanced knowledge in Electronics & Telecommunication Engineering subjects along with additional knowledge in mathematics, basic sciences, inter-disciplinary engineering, management and economics, enabling them to solve basic and complex engineering problems.

PEO.2: The Graduates will succeed in getting the entry-level engineering positions in Allied Industries, Design & Fabrication firms and in Government Sectors at regional, national and international levels.

PEO.3: The Graduates will succeed in the pursuit of higher studies and will continue life long learning.

PEO.4: The Graduates will be aware of social responsibility, ethical standards and environmental issues to serve the society better

Programme Specific Outcomes

PSO.1: Understand the basic concepts in Electronics & Telecommunication Engineering and apply them to the respective areas.

PSO.2: Solve complex engineering problems using latest hardware and software tools, along with analytical skills.



PSO.3: Understand the concepts of Data Communication Networking, Optical Fiber and Wireless Technology along with ability to classify, analyze and implement latest communication technologies.

PSO.4: Demonstrate applications of Embedded system in Social, Environmental and applied areas of Engineering Sciences.

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 behaviour 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.



Program Outcomes (POs)

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 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)

Student Activities

Student activities play a vital role in the holistic development of learners beyond the confines of the classroom. These activities include participation in technical events, cultural programs, sports, seminars, workshops, and social initiatives, all of which help students enhance their skills and talents. Through such engagements, students develop leadership qualities, teamwork, communication skills, and a sense of responsibility. Technical activities like project exhibitions, coding competitions, and quizzes strengthen their practical knowledge, while cultural and sports events promote creativity, physical fitness, and emotional well-being. Moreover, involvement in community service activities instills values of empathy and social awareness. Overall, student activities contribute significantly to shaping confident, skilled, and well-rounded individuals prepared to face real-world challenges.

Photos



Department Wall Magazine

“Vigyan Varta,” the department wall magazine, serves as a vibrant platform to showcase innovation, creativity, and technical excellence among students and faculty. It reflects the spirit of scientific inquiry by presenting articles, posters, and insights on emerging technologies such as semiconductor advancements, artificial intelligence, and future communication trends. The magazine also features student achievements, project highlights, and thought-provoking ideas, encouraging active participation and knowledge sharing. Designed with a blend of technical and creative elements, “Vigyan Varta” not only enhances awareness of current developments but also fosters curiosity and a passion for learning. It stands as a testament to the department’s commitment to nurturing talent and promoting a culture of continuous innovation.

Photos



Student Achievements

Student achievements reflect the dedication, talent, and hard work of learners in both academic and co-curricular domains. Students consistently excel in university examinations, secure top ranks, and actively participate in technical competitions, workshops, and research activities. Many have showcased their skills by presenting innovative projects, publishing research papers, and earning accolades at state and national levels. Along with academic excellence, students also achieve recognition in cultural events, sports, and social initiatives, demonstrating their all-round development. These accomplishments not only bring pride to the department but also inspire fellow students to strive for excellence and contribute positively to society.

Ms.Neha Shejole Third year Electronics and Telecommunication Engineering Student won first prize in Project competition held at SSGMCE, Shegaon





Vedant Bhendkar, a dynamic Third-Year E&TC student and founder of CircuitoClaro Solutions Pvt. Ltd., excels in embedded systems and innovation, creating impactful projects in IoT, robotics, and assistive technology.

Faculty Achievements

Faculty achievements reflect the dedication, expertise, and continuous pursuit of excellence by educators in both academic and professional domains. The faculty members actively contribute to research by publishing papers in reputed journals, presenting at national and international conferences, and securing patents and copyrights. They regularly participate in Faculty Development Programs, workshops, and training sessions to stay updated with emerging technologies and innovative teaching methodologies. Many faculty members have received awards, recognitions, and appreciation for their outstanding contributions to teaching, research, and academic leadership. Their commitment not only enhances the quality of education but also inspires students to achieve higher standards of performance and innovation.

SIPNA SHIKSHAN PRASARAK MANDAL'S
SIPNA COLLEGE OF ENGINEERING AND TECHNOLOGY, AMRAVATI
 ESTD 1999
 An Autonomous Institute
 (Affiliated to Sant Gadge Baba Ambedkar University)
 Accredited by NAAC with grade 'A+' Accredited by NBA, Accredited by ISO

FACULTY ACHIEVEMENTS

Chronicles of Excellence celebrates the remarkable journey and accomplishments of our dedicated faculty members. This space showcases their contributions in academics, research, innovation, and professional service, reflecting a steadfast commitment to excellence. Their achievements not only elevate the standards of our institution but also inspire students to strive for success and continuous growth.

Heartiest congratulations to Prof.(Dr.) Nilesh Kasat Nominated as Subject Expert at out of State public service organisations.

Heartiest congratulations to Prof.(Dr.) Jay Gurjar for being nominated as a Subject Expert on the Research Recognition Committee (RRC) for Electronics and Telecommunication Engineering at North Maharashtra University, Jalgaon.

Heartiest congratulations to Prof.(Dr.) S.S.Mungona who has worked as a Reviewer at the 9th International Conference on Computing, Communication, Control and Automation (ICCCCA-2023) organised by Pimpri Chinchwad College of Engineering, Nigdi, Pune on 22nd & 23rd Aug 2023.

Heartiest congratulations to Prof.(Dr.) S.S.Tawani who has worked as a Reviewer at the International Conference on Innovations in Communication, Geoscience and Robotics organised by Shri Sant Gajanan Maharaj college of Engineering shegaon to be held on 29th, 30th April 2024.

Heartiest congratulations to Prof.Dr. S.V.Rode, Prof.Dr. V.A.Gulhane and Prof.M.T.Gadare for Publishing a book entitled "Generative Intelligence in Python"

Heartiest congratulations to Prof.(Dr.) E.G.Najure who has successfully completed 6 domains specific swayam MOOC online courses and brought laurels to the department.

Heartiest congratulations to Prof.(Dr.) N.V.Bathi who served as Conference Chair for International Conference on interdisciplinary technologies in research and artificial intelligence organised by department of computer applications and artificial intelligence in computer society and Dr.Ambedkar law University Chennai.



Placement Achieved, Internship Secured



Sr.No	Name of the Student	Name of the company	Designation
1	Shravani R.Kedar	Sunsathi Solar Pvt. Ltd., Amravati	Sales Engineer
2	Agham Sanjay Yawale	Sunsathi Solar Pvt. Ltd., Amravati	Sales Engineer
3	Yash Mangesh Bobade	Sunsathi Solar Pvt. Ltd., Amravati	Sales Engineer
4	Maithili Ravi Rajurkar	Sunsathi Solar Pvt. Ltd., Amravati	Sales Engineer
5	Adarsh Prashant Patil	Mimic Infotech Pvt. Ltd., Pune	InternField Application Engineer
6	Rahul Sanjay Marode	Mimic Infotech Pvt. Ltd., Pune	InternField Application Engineer
7	Om Sanjay Mulmule	Qspiders Campus Connect (Yantra Software Solutions Pvt. Ltd., Pune)	Software Intern
8	Aastha Sandip Diwane	Qspiders Campus Connect (Yantra Software Solutions Pvt. Ltd., Pune)	Software Intern
9	Kalyani Umeshchandra Deshmukh	Qspiders Campus Connect (Yantra Software Solutions Pvt. Ltd., Pune)	Software Intern
10	Madhura Vidyadhar Sakharkar	Qspiders Campus Connect (Yantra Software Solutions Pvt. Ltd., Pune)	Software Intern
11	Namrata Naresh Pokale	Qspiders Campus Connect (Yantra Software Solutions Pvt. Ltd., Pune)	Software Intern
12	Parvi Ashish Chakravarti	Qspiders Campus Connect (Yantra Software Solutions Pvt. Ltd., Pune)	Software Intern

13	Neha Nekraj Thakur	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Trainee Engineer
14	Shweta Arun Kukade	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Apprentice Engineer
15	Shravani Ravindra Kedar	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Apprentice Engineer
16	Shreya Diliprao Khalokar	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Apprentice Engineer
17	Radhika Vivekanand Wakode	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Apprentice Engineer
18	Roshan Sharadrao Wadurkar	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Apprentice Engineer
19	Indrayani Bhagwan Bhatkar	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Apprentice Engineer
20	Snehal Sunil Patil	Epitome Components Pvt. Ltd., Sambhaji Nagar,	Apprentice Engineer
21	Vedant Pravin Jirapure	Hackveda Solutions Pvt. Ltd., New Delhi	Intern
22	Shweta Arun Kukade	Hackveda Solutions Pvt. Ltd., New Delhi	Intern
23	Sahil Palaskar	Chetas Control Systems Pvt. Ltd , Pune	Trainee Engineer
24	Sarthak Pande	Chetas Control Systems Pvt. Ltd , Pune	Trainee Engineer
25	Bhavesh Ravekar	Chetas Control Systems Pvt. Ltd , Pune	Trainee Engineer
26	Vaibhav Pundekar	Chetas Control Systems Pvt. Ltd , Pune	Trainee Engineer
27	Sujal Gilorkar	Chetas Control Systems Pvt. Ltd , Pune	Trainee Engineer
28	Yash Harne	Chetas Control Systems Pvt. Ltd , Pune	Trainee Engineer



29	Om Sontakke	Chetas Control Systems Pvt. Ltd , Pune	Trainee Engineer
30	Vaibhav Pundekar	Jabil Electronics Pvt. Limited	Associate
31	Gayatri Surjuse	Jabil Electronics Pvt. Limited	Associate
32	Shweta Dhage	Jabil Electronics Pvt. Limited	Associate
33	Mrunali Pawade	Jabil Electronics Pvt. Limited	Associate
34	Sakshi Chaudhari	Jabil Electronics Pvt. Limited	Associate
35	Mrudula Kulkarni	Jabil Electronics Pvt. Limited	Associate
36	Divya Kalbande	Jabil Electronics Pvt. Limited	Associate





Contact Us

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