M.Tech. in EC
with Specialization in Wireless Communications and Signal Processing (WC & SP)

Academics

Service to Society

DA-IICT

CR-Rao Institute

Research & Innovation

DA-IICT at a Glance

DA-IICT was founded in 2000 as a unique university devoted to the cutting-edge interdisciplinary area of Information and Communication Technology (ICT). ICT was emerging as the technology of the future bringing in the fourth Industrial Revolution. Well known and highly qualified faculty members joined DA-IICT and developed a curriculum and research program steeped in all aspects of ICT, societal, scientific, and technical. This spirit has been nurtured for the last 18 years and DAIICT wants to continue its excellence in interdisciplinary teaching and research well into the future.

The Act No. 6 of 2003 of the Gujarat Legislature provided for the establishment of the DA-IICT and conferred on it the status of a University. On 30 November 2004, the DA-IICT was included in the list of Universities maintained by the University Grants Commission under Section 2(f) of the UGC Act, 1956. DA-IICT is a member of the Association of Indian Universities (AIU) as approved by the AIU at its 84th Annual Meeting held during 12-14 November 2009. The National Assessment and Accreditation Council, Government of India has accredited DA-IICT with an **'A' Grade in 2017**.

Vision and Mission

The vision of the institute is to become a globally recognized institution that offers innovative programs, outstanding faculty, an atmosphere of innovation, a responsive administration, a vibrant campus and a collaborative learning environment that continuously adapts to the changing landscape of research and innovation and the future of work. Toward this, we plan to design and deliver academic programs in both disciplinary and multidisciplinary domains to prepare students for a rapidly evolving work environment.

Ranked among top 100 Engineering Institution by MHRD, Govt of India (NIRF-2019 rankings)

NAAC (Accreditation): A Grade (Year- 2017)
Annual Student Scholarships: INR 3-4 Crores

First Private University to mentor PPP model based (central, state and industry funded) Institute - IIIT Vadodara (build academics and provided faculty support)

Only **Anchor Institute** in Gujarat to mentor the Faculty members of Engineering Colleges in Gujarat

Awarded the **Best University** in Innovation in Gujarat by Govt. of Gujarat in 2017

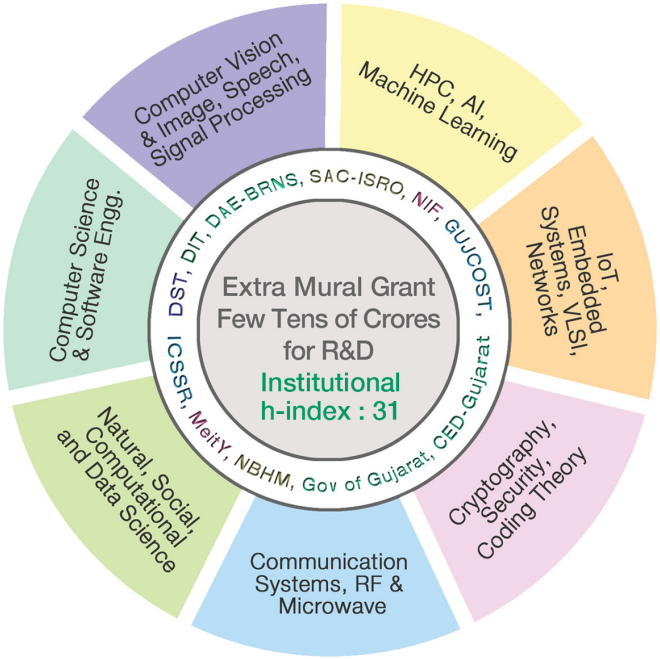
CR Rao Institute at a Glance

C. R. Rao AIMSCS is engaged in cutting-edge research in areas of Mathematics, Statistics, Wireless Communication, Computer Science, Machine Learning and interdisciplinary fields. The Institute was established in honor of Prof CR Rao, FRS in 2005. It is located on the campus of the University of Hyderabad in an area of about five acres. The institute is autonomous body registered society under AP Societies Registration Act. (Regd. No. 547/2005) and recognized as SIRO by Department of Scientific and Industrial Research (DSIR) and also research centre recognition by University of Hyderabad. A Full-time two-year M. Tech program in Information Security with Cyber Security specialization is started for the 2018-19 academic year jointly with University of Hyderabad an approved by AICTE. It is expected to be a model in cooperation with emphasis on Synergy of efforts in problem solving. The Institute having outstanding faculty and research staff drawn in equal pro-portions from the fields of Mathematics, Statistics, Computer Science and Electronics and Communications. The institute provides a forum for national and international experts from different fields to meet and address problems of mutual interest. The mission of the Institute includes dissemination of advances made in these fields to the society through workshops and conferences, short courses, guiding doctoral students and providing consultancy services to researchers in government as well as industrial organizations. The Institute has conducted several national and international conferences and workshops in Cryptology, Information Coding and Security including INDOCRYPT 2010, INDOCRYPT 2019 and SPACE 2016. AIMSCS has established Centre of Excellence in Mathematical Sciences, Machine Learning and Artificial Intelligence, Cryptography and Cryptanalysis, Wireless Communication and Cyber Security.

Academics and Research at DA-IICT

Interdisciplinary and Multidisciplinary Research Oriented Academic Programs

Program Level	Name of the Program	Duration	Unique Features
Doctoral	**PhD**	4-6 years	- Entry through national level entrance test & interview - Fellowship **INR 25000 – 28000**
PG	**MTech** (ICT)	2 years	- Three specializations
	MTech (WC-SP)	2 years	- In collaboration with **C R Rao Inst.**
	MTech (CS-DS and CS-IS)	2 years	- In collaboration with **IIT Jammu**
	MSc (IT)	2 years	- Industry oriented IT program
	MDes (CD)	2 years	- Fusion of ICT and Design
	MSc (Data Science)	2 years	- SAS Global Certification
	MSc (Agriculture Analytics)	2 years	- In collaboration with **AAU**, **IIRS**
UG	**BTech** (ICT)	4 years	- 1st institute in India to offer **unique program** in ICT in 2001
	BTech (Hons in ICT; minor in Computational Science)	4 years	- 1st institute in India to offer UG program in Computational Science
	BTech (Mathematics and Computing (MnC)	4 years	- Intersection of Computer Science & Applied Mathematics to solve complex problems



International Projects
NSF-USA, Indo-French, Indo-Spain

Industry / Consultancy Projects
nVIDIA (USA). FactSet (UK), Vista (India), ISRO
Amnex Technology, GoG (Climate Dept.)

Major MOUs / LOUs
Univ. of Oregon (USA), Univ. of Auckland (NZ),
Univ. of Swaziland (UoS), Univ. of Dayton (USA),
Univ. of Hildesheim (Germany),Univ. Mara (Malaysia)
Univ. of Evora (Portugal), ISEP (France),
ISRO, Indian Navy, ISI Kolkata, TCS, Samsung
R&D, IIT Gandhinagar, IIT Jammu, IIIT Vadodara,
C R Rao AIMSCS, EDII

Program Overview

The main question that you, an interested and prospective applicant to the MTech WC-SP program, have as you read this is "should I decide to enroll in this program?" We believe the answer is "Yes". The following are the reasons.

First, both the WC (Wireless Communication) and the SP (Signal Processing) are at the forefront of the technological advances that the entire human society will experience over the next ten years. In the list of 10 key high-tech industries of the 21st century, the Chinese President Xi has included 5G communications and artificial intelligence as the two such key technologies. You will study both these technologies as a part of this degree program and will acquire a skill set that will position you to be hired by the industries working in these domains. The companies such as Amazon.com (Project Kuiper), Tesla (Starlink), Google (Project Loon), facebook (Internet from the Skies), Qualcomm, Virgin Atlantic and Bharti Airtel (OneWeb), to name just a few, are launching multi-million dollar mega projects which combine the state-of-the-art in the communication systems and machine learning. The coming-together of the communication systems and signal processing/machine learning (ML) is an exciting convergence and this degree program will enable you to stand at the forefront of this joint domain. **This degree will allow you to position yourself at the right place at the right time**.

Second, the specialization is the key in today's competitive job market. As an example, those entering the medical college today are seldom content with a basic degree in medicine – they insist on specializing, since greater their specialization, the greater their ability to stand apart from the crowd and, more importantly, to contribute toward solving a specific set of problems that very few have expertise for. **When you graduate from this program, unlike many of your contemporaries, you will become an expert in the communication technologies and signal processing – this is a unique specialization which will be highly coveted by the industries over the next at least ten years**. Many of our recent graduates have obtained job offers from the companies such as Qualcomm, Perfect Wireless, TCS, etc. There is a 100% rate of employment of our alumni who maintained their CGPI (cumulative grade point average) above a threshold during the degree program.

Third, apart from the practical and pragmatic career-oriented considerations such as the above, there is a more fundamental reason for studying a course on the CS combined with the SP and ML. The ability to communicate that we humans possess is not disconnected from our ability to do signal processing intelligently – the intelligent agents are naturally highly skillful communicators and signal processors and vice versa. Similarly, to become an expert in the machine intelligence, one has to learn the theory of communication and signal processing.

The expertise in the former cannot be achieved without mastering the latter. The evidence of this lies in today's modern communication device --- be it the cellphone, the computer connected to Internet, or the satellite TV. As these machines become increasingly intelligent, they also become superior communication and signal processing devices. The smartphone is "smart" not only because it offers many Apps, but more fundamentally because it actively helps its owner --- without the owner's awareness --- in the process of communication.

The messages (audio, video, images, etc.) are "understood" by the communication device and are compressed before the transmission (similar to how the essence of a lengthy speech by a politician is often summarized by a journalist before it is succinctly published in the newspaper).

The smartphone also intelligently overcomes the effect of noise and interference during the message transmission (this is similar to how your brain can infer the message even though it hears only a few of the words spoken by your friend in a party room when the rest of his/her words are drowned in the loud music playing in the background). The result is that the we – the end-users of the smartphones – hear clean, uninterrupted, speech or watch videos that do not buffer even though the communication links may be highly noisy.

The magical (though taken-for-granted) ability of our communicating brains that allows us to read between the lines or understand the meaning even when we do not hear part of the conversation is a signal processing skill which is highly sought after in the machine learning community.

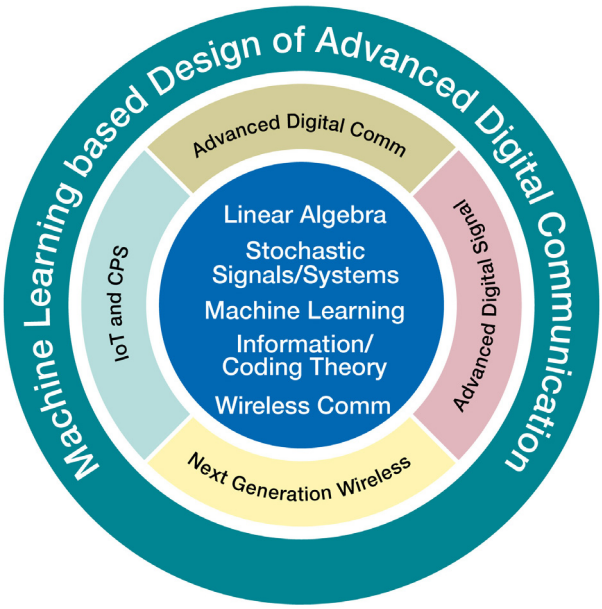
This is a unique degree program in which you will study both the communication/signal processing theory and the theory of machine intelligence in an integrated and unified manner – the manner in which our brains work shows that this is the natural approach toward a study of these two theories.

Objective & Outcome

The objective of this program is to equip the students with the competency and skill sets of two different domains – wireless communication systems and signal processing/machine learning. Specific goals are (i) to impart strong foundations, tangible and employment-ready skills and the state-of-art knowledge in the WC and the SP/ML; (ii) to provide analytical and technical platform using which the students can opt either for the higher (doctorate-level) studies or employment at a corporation either in India or abroad.

In this degree program, you will study the fusion of the advanced algorithms that lie at the heart of the wireless and digital communication systems and those that drive the signal processing and machine intelligence. You will study, implement and experiment with the Maximum-A-Posteriori (MAP) and Maximum Likelihood (ML) Detection algorithms, the matched filter and the adaptive stochastic gradient descent based algorithms, the belief propagation algorithms operating on bipartite Tanner graph, the dynamic programming and the heusistic search algorithms (e.g., the Dijkstra's algorithm, the A* search, etc.), the Least-Squares, the Recursive Least Squares, the Least Mean Squares and the MMSE algorithm, the Expectation Maximization (EM) algorithm, linear and nonlinear interference cancellation algorithms, the backpropagation algorithm on multi-layered Neural Networks, etc. You will apply these algorithms to solve the practical problems of digital wireless communication, digital signal processing and machine learning applications.

Towards this, the curriculum includes the courses that provide the students both the theoretical foundation and the hands-on experience through the Lab sessions. A well-rounded curriculum will be delivered by the competent faculty. The program is well supported by placement process through a centralized placement cell of the institute.



Program Structure

M.Tech. ECE with specialization in Wireless Communication and Signal Processing (WC-SP) is a full-time two-year (four semesters) program. This program is offered jointly by DA-IICT and CR Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIMSCS), Hyderabad. The Degree will be conferred by DA-IICT. The students admitted to the program will study their first two semesters at DA-IICT. They will have an option to pursue the studies of the third and the fourth semester either at DA-IICT or at CR Rao AIMSCS, Hyderabad based on their research interest. Each student joining the program will be assigned a faculty advisor who will provide general academic guidance and support to the student.

In the first semester, the students are required to take a course on Introduction to Wireless Communication – this is a core (mandatory) course. In addition, they will take two general elective (GE) courses of 6 credits. One of these two GE course can be taken from a basket of designated mathematics courses, where the preference is for the course Linear Algebra, Random Variables and Processes. The other GE course is to be taken from a basket of designated technical elective courses. Here, the students may take either Wireless System Design course or Estimation and Detection Theory course. In addition, the students will take two program core courses; specifically, a course on Communication Skills and Technical Writing, and a Programming Lab.

In the second semester, the students are required to take a core course Advanced Digital Signal Processing. In addition, they will choose two elective courses from two different elective baskets – one containing the wireless communication courses and the other containing the digital signal processing (DSP) courses. In this semester, the students will undertake a minor project, under the guidance of a faculty mentor.

In the summer, the students will commence a major project I, which is a supervised project under the guidance of a faculty mentor. During the summer, the student undertakes preliminary work leading to the problem definition/formulation. The faculty mentors for minor project and major project I may be same or different.

In the third semester, the students will take two specialization electives and will continue the major project I.

Finally, in the fourth semester, the students will opt to conduct either Major project II on campus, or Industrial Training Project. If the student undertakes major project II, it must be a continuation of Major project I. This major project I can be conducted either at DA-IICT or CR Rao AIMSCS. Upon successful completion of major project II, student is awarded a thesis certificate.

The program has 16 seats total, out of which 12 seats are for the GATE-qualified candidates. Another four seats are reserved for the applicants who have not either taken the GATE or they have not qualified in the GATE exam. The candidates applying to this program will be short-listed and will be invited to an interview session which will determine the final admission of the applicant.

Program Structure

SEMESTER-I (Autumn Semester 1st Year)

Course Name		Credit Structure
Core	Communication Skills and Technical Writing	2
Lab	Matlab, Python and C++	3
Sp. Core	Introduction to Wireless Communication	4
Gen. Elect. (Technical)		3 or 4
	Wireless System Design	
	Detection and Estimation Theory	
	Any other relevant course	
Gen. Elect. (Math)		3 or 4
	Probability and Random Variables	
	Linear Algebra	
	Graph Theory	
	Optimization	
	Any other relevant course	
Total Credits		**15 or 17**

SEMESTER-II (Winter Semester 1st Year)

Course Name		Credit Structure
Sp. Core	Advanced Digital Signal Processing	4
Sp. Electives I		
	Advanced Wireless Communication	4
	Application of ML to Wireless Comm Systems	4
Sp. Elective II		
	Speech Processing	4
	Digital Image Processing	4
Minor Project I		3
Total Credits		**15**

Summer: Start of Major Project 1

SEMESTER-III (Autumn Semester 2nd Year)

Course Name		Credit Structure
Sp. Electives III and IV		
	Adaptive Signal Processing	4
	Next Generation Communication Systems	4
	Cyber-Physical Systems and Internet of Things	4
	Any other relevant course	
Major Project I - Continuation		
Total Credits		**14**

SEMESTER-IV (Winter Semester 2nd Year)

Major Project II or Industry/Research Internship	12
Total Credits	**12**

Total Program Credits: (Tentative) 56

The composition of the elective baskets is representative and subject to change

Admissions

Total Seats: 16, Seats through GATE : 12 and Seats through Non-GATE : 4

Eligibility Criteria

GATE Qualified candidates

A candidate with a qualifying degree in any one of the following:

- BE/BTech (CS/IT, ECE, Electrical, Instrumentation), MSc (Electronics)
- M.Sc. degree in Computer Science / Electronics / Mathematics / Physics / Statistics.
- M.S./M.Sc. degree of DA-IICT.
- M.C.A. degree (3 year program)

The aggregate marks in the qualifying degree should not be less than 60% or equivalent as per the norm set by the degree awarding Institute/University.

Non-GATE Qualified candidates

- MSc (Electronics), BE/BTech (ECE) with (min 65%)
- The aggregate marks in the qualifying degree should not be less than 65% or equivalent as per the norm set by the degree awarding Institute/University.

Candidates appearing in their final degree examination and expecting to complete it by July 2022 may also apply. However, their final admission will be subject to the condition that they obtain an aggregate of marks required based on mode of admission i.e. GATE/Non-GATE, or its equivalent as per the norms set by the degree granting Institute/University. All admitted candidates have to submit their degree certificates or proof of completion of degree, before 30 October 2022 failing which their admission is liable to cancellation.

Age: There is no age limit applicable to this program.

Selection Process

Admission to M.Tech. in EC with Specialization in Wireless Communication and Signal Processing will admit candidates through two channels from this year: GATE and NON-GATE.

Candidates who have a valid GATE score in the disciplines of **Electronics & Communication Engineering** (EC) only can apply. The ranking of candidates with GATE score of 425 or above will be on the basis of GATE score only. The candidates with GATE score less than 425 may be required to appear for an interview at DA-IICT in person/Online. Ranking of such candidates will be based on the GATE score and performance in the interview.

Non-GATE candidates selection will be based on their qualifying degree and performance in the interview. Weightage will be as follows:

40% weightage -> qualifying degree
60% weightage-> interview

Note: At the time of finalization of admissions, it is likely that some of the Universities in the country would not have announced the final year results of the qualifying degrees prescribed for admissions. In such cases, 40% weightage in qualifying degree will be assigned to the aggregate marks obtained in all the previous University examinations of the qualifying degree. However, if the applicant fails to receive 65% aggregate marks in the qualifying degree after announcement of final year results, her/his admission will stand discontinued forthwith and no representation/appeal will be entertained.

Note: The decision of the Competent Authorities of DA-IICT regarding eligibility and selection of any candidate shall be final.

For Inquiries: Voice Call: 080 66 91 91 80

The Faculty

Blending academic excellence, research eminence & professional experience

DA-IICT successfully attracts the best teaching and research talents who have completed their doctoral studies at premier institutes in India (such as IISc, ISI, IPR, PRL, IITs, IIITs, NITs, HBNI, Central Universities etc.) or international institutes of repute (in USA, Canada, Europe, Australia, Korea, Singapore etc). All our faculty members are active researchers in their respective fields. Most of our faculty members have significant international exposure in terms of research and industry experience, and are involved in national/ international collaborative research projects. They are an exceptional group of academicians in Mathematics, Statistics, Computer science, Physics, Data Science, Computational Science, Communication, Signal Processing, Electronics, Design, Humanities and Social Sciences who are determined to push the frontiers in research and technology. They conduct advanced research and the new knowledge they create routinely benefits classroom learning.

The complete list of our faculty members and their research interests can be found at:
https://www.daiict.ac.in/people/faculty/

Research Interest of Faculty Members

Professor S. Goel at CR-Rao Institute are interested in, and actively working on, the research topics of (i) security protocols for the IoT systems and M2M (machine to machine) communications, (ii) synchronization and cell search algorithms for the Long Term Evolution (LTE) wireless systems, (iii) cryptography for the Massive MIMO (Multiple Input Multiple Output) systems, (iv) image transmission using USRP using different modulation and coding techniques, (v) network slicing in 5G wireless systems using machine learning algorithms, (vi) side channel analysis and light weight block cipher on an FPGA (field-programmable gate array), etc.

Professors A. Jindal, R. L. Das, S. Mandal and Y. Vasavada at DA-IICT, Professor S. Goel at CR-Rao Institute are interested in and working on the research topics of (i) application of machine learning techniques to the physical layer of 5G communication systems, specifically to nonorthogonal multiple access (NOMA) and Massive MIMO, (ii) model-checking and efficient signaling design of cyber physical systems (CPS), (iii) parameter estimation of the noise present in the real-world color image and dehazing of the images, (iv) compressive sensing based or adaptive filter based channel estimation for orthogonal time-frequency-space (OTFS) modulation applied to Massive MIMO, (v) efficient detection algorithms for the spatial modulation and generalized spatial modulation in the 5G systems, (vi) compressive sensing based wideband spectrum sensing using machine intelligence and belief propagation algorithms, (vii) hybrid beamforming algorithms based on advanced signal processing and deep learning, (viii) low density spreading method for NOMA and the detection algorithms at the NOMA receiver based on the compressive sensing and machine learning, (ix) efficient machine-learning based implementation of the belief propagation algorithms for the LDPC and the Polar codes in 5G communication systems, etc.

Prof. D. Ghodgaonkar, A. Ghosh, S. Gupta and Y. Vasavada at DA-IICT are interested in (i) application of advanced signal processing and machine intelligence algorithms to Interference Mitigation in the navigational satellite systems using phased array antennas, (ii) development of smart antenna array adaptive and blind beamforming and tracking algorithms for the satellite on the move (SOTM), (iii) network management, planning and capacity analysis for the satellite and Unmanned Aerial Vehicle (UAV) based wireless communication systems, (iv) ground-based beamforming for next-generation satellite communication systems, (v) design of efficient LDPC and Polar encoding and decoding methods for the navigational and optical satellite links, (vi) design of microwave non-destructive testing (NDT) methods, (vii) design of dielectric resonator antennas for the navigational satellites, (viii) theory and simulation of the optical wireless signals encrypted with chaos, etc.

As an MTech student in the CS-ML program, you will have opportunity to interact with the above faculties during the first year of your degree program (you will likely take the classes taught by many of these faculties and you will come to know them and their research very well). You will have freedom to choose the faculty advisor of your choice for conducting your MTech thesis research in the second year of your program. The thesis topic will be selected by

The Faculty

you based on consultations with your thesis advisor. In addition, you will also be given an opportunity to pursue an industrial/research internship during the summer semester (the internship often leads to a full-time job offer once the student graduates). There are several on-going government-sponsored research projects lead by the above faculties at these two Institutes. As an MTech CS-ML student, you have a good chance of obtaining the research associate position (Junior Research Fellow or JRF) in these projects during the two years of the degree program. The JRF research is typically well-aligned with his/her MTech thesis, it is a prestigious and highly-paid position. Finally, the MTech thesis research, irrespective of whether it is conducted as a part of a sponsored research, will pave the way toward a possible doctorate study program either in India or abroad, in case you opt for the Ph.D. studies.

Message to Prospective Students

Prof. K. S. Dasgupta, Director DA-IICT
The Post Graduate - M Tech in Communication Systems and Machine Learning – CSML is a unique fusion of concepts, underlying mathematics & statistics, techniques, tools of Communication Systems and Machine Learning. The participants of this one-of-a-kind program will have (i) strong academic foundation in CS & ML, (ii) analytical skills to take up research challenges of R & D Institutes in areas related to CS&ML, and (iii) Industry ready skills to solve problems using Machine Learning techniques and tools.

Prof. M. L. Das, Dean AP, DA-IICT
Communication Systems and Machine Learning (CSML) specialization in the MTech(ICT) program at DA-IICT provides a strong foundation in the field, impart knowledge in industry relevant courses and a compulsory thesis training. The CSML specialization is closely mentored by highly experienced faculty in the field. Students in the specialization would be trained through research-led teaching and insightful hands-on experience in core subjects, electives and compulsory thesis work. I welcome all aspirants to take part of the journey of this specialized program.

Prof. M. V. Joshi, Dean Research, DA-IICT
Integrating CS and ML leads to numerous industrial opportunities. Strength of DAIICT lies with the faculty experts working in the area of ML applied to CS. I am sure the students joining this specialization would definitely enjoy learning the concepts in this area. Hence, I feel DA-IICT should be the right choice for you.

From the Board of Studies (BoS), MTech CS-ML Degree Program

Prof. Ribhu, Asssistant Professor, IIT-Guwahati
As a member of the BoS for this MTech CS-ML program, I have been involved in multiple detailed deliberations conducted among the various faculties of DA-IICT, CR Rao Institute, several IITs and Industry Representative. We have carefully crafted this program and given a lot of thought to its structure and organization. I am quite excited with the way this program has turned out. I am positively hopeful that both the students and their prospective employers will find the skills gained from this program quite useful.

Dr. Sumitesh Sarkar, Outstanding Scientist, Group Director, Satcom & Navigation Payload Area, Space Applications Centre (ISRO), Ahmedabad.
Communication System is at the heart of our modern Information Centric Society, powering today's entertainment and tomorrow's advance communication links - wired, wireless and space. In order to design high speed, agile and high frequency-Ku/Ka band on board communication transponders, Space Research Institutes/Space Industries need Communication Engineers with strong academic foundations in Communication Systems and underlying Mathematics as well as strong exposures and required technical skills to apply data driven Machine Learning (ML) techniques in designing channel decoders, demodulators, allowing high and seamless throughput even in presence of coexisting terrestrial channels etc.

I strongly feel this Post Graduate program- MTech in CS-ML will create quality human resources who can take up research challenges in applications of ML tools in Communication Systems design. In addition, this program will also impart Industry ready skills to handle other applications using ML techniques.

Alumni-Speak, Student-Speak

Alumni-Speak

Naitik Parekh (year of graduation: 2021, thesis topic: Antenna Array Beamforming using Machine Learning Algorithms, current employment: Perfect Wireless Inc. Pune)

I joined DA-IICT in 2018 to pursue my MTech in ICT. I had done my bachelor's in Information Technology and had no exposure to communication systems. The introductory course titled 'Basics of Communication System' (offered in my first semester) intrigued me. The curriculum was designed so well that it laid down a very strong foundation of the fundamental courses and gave liberty to select from a wide spectrum of elective courses. I chose 'Digital Communication with applications of Machine Learning' as my area of research. Here at DA-IICT, I learned the meaning of research in the true sense; research is not just about coming up with novel ideas that solve problems, but it is also about understanding the underlying concepts and justifying the new idea with apt analysis. Along with rich opportunities to sharpen my technical skills, DA-IICT provides a range of co-curricular and extra-curricular opportunities in form of the technical fest, sports fest, cultural fest, and a number of hobby clubs to maintain the balance. Not to forget among all this, there are ample companies visiting our campus that give us commensurate chances to get top-notch jobs. The culture at DA-IICT equips us with competent technical skills and smart inter-personal skills to be prepared to face the trials and tribulations of the real world.

Shubham Malaviya (year of graduation: 2019, thesis topic: Defending Machine Learning Models against Adversarial Attacks Using GANs, current employment: Tata Consultancy Services (TCS))

DA-IICT always works to sustain academic excellence and personalized attention for its students. We are encouraged to think about how we will and can move forward every day towards reaching our goal. M.Tech curriculum offers programs to keep us on the road to research and professional success. I opted for courses across various domains (image, text, statistics), which motivated me to brainstorm on how to apply Machine Learning to real-life problems. Thus, improving my problem-solving ability, which most industries sought. And one of the best parts about DA is the Resource Center through which we gain access to online academic resources. My M.Tech research helped me to get a research-related job offer aligned with my area of interest. Moreover, always helpful professors and fellow students make the journey more enjoyable.

Students-Speak

Bhavesh K. Singh (year of graduation (expected): 2021, thesis topic: Adaptive Algorithms for the Next Generation Wireless Systems, current employment: JRF on an ISRO sponsored research project)

The program offered by DA-IICT makes sure to build up a strong base in areas of signal processing and communication technologies. It had a good mix of courses from other domains such as VLSI and statistical mathematics to act as a bridge between theory and practice. My learning experience at DA was very engaging. The faculties as well as the Director sir at DAIICT are very approachable, understanding and polite. They take interests in students' problems very keenly and provide necessary feedback timely. DA-IICT is also very well equipped with laboratories which are specially designed for ECE students. They have a separate RF, Communication Engineering & HPC Labs which are put to good use by ECE students here.

Chandra Kishan (year of graduation (expected): 2021, thesis topic: Application of Compressive Sensing Algorithms for the Next Generation Wireless Systems)

I have had a very good learning experience at DAIICT. The professors here are approachable and are friendly to the students when we approach them regarding our doubts. The lab sessions also help in understanding the course work. The lab facilities which are available to us help us in pursuing our interests. We are offered elective courses which we can choose based on our interest and also align the courses that we take with the research work in the second year. The campus life is vibrant with extracurricular activities apart from the regular academic curriculum.

Divya (year of graduation (expected): 2021, thesis topic: Channel Estimation for the Orthogonal Time Frequency Space Modulation)

This program is jointly offered by reputed institutions like DA-IICT and CR Rao AIMSCS, which gives us an opportunity to learn various interrelated subjects from the very basics. The course helped us develop a good understanding of communication systems and the lab work gave us hands on experience of developing algorithms for the same. In the recent works the ML algorithms are found to be very helpful for solving the wireless communication problems, so this modified course will be offering a complete package with which you can greatly contribute to the research community or use this skill set in the industry. DA-IICT has a lot to offer from well-equipped labs to highly experienced faculty and a joyful campus life.

Alumni-Speak, Student-Speak

Aarushi Dhami (doctorate student, year of enrollment: 2019, thesis dissertation topic: Adaptive Hybrid Beamforming Algorithms for Massive MIMO Systems based on a Machine Learning Approach)
I am a PhD student pursuing research in the field of wireless communication, however my journey in DA-IICT started a little earlier when I enrolled for MTech program. Both MTech as well as PhD programs are very comprehensive and most importantly, the subjects taught are in line with the recently developing technologies. The labs are highly functional and equipped with tools which give a hands-on experience along with classroom learning. With the experience of our professors and DA-IICT's inclination towards research, I got the opportunity to work on an ISRO RESPOND research project, which has eventually connected me to the practical scenarios of the real world. Being a student, I feel the institute has given me ample freedom and support in carrying out my research work. To relieve stress and connect with oneself, the campus life offers a bag full of co-circular activities. The friendly environment and the evenings in DA, with birds chirping around, chit chatting with colleagues and faculties over a cup of tea are the moments I will always cherish. So far, it has been an enriching journey to learn and grow under the guidance of our esteemed professors. The institute has given me a platform to push myself and uncover my hidden potentials.

Bibin Baby John (doctorate student, year of enrollment: 2018, thesis dissertation topic: Spatial Modulation for Massive MIMO Systems) Hai, I am Bibin, a Ph.D. scholar at DA-IICT, working on Next Generation Wireless Communications under the guidance of Prof. Yash Vasavada. I have been to a few campuses in my life, both as a student and a teacher, and you can believe me when I say DA-IICT is the best thing that has ever happened to me. With well-qualified and student-friendly Professors, the green campus always keeps you calm and lively. The campus is always full of life and keeps you going one way or another. The research life in DA is a great motivation for any prospective student. If you ever feel saturated with the lab-life, you can move out onto your favorite spots on the campus, or to the Resource Centre (my personal favorite is the black-tea working hours in the open cafeteria). Specifically for MTech CS-ML students, there is a wide range of open research opportunities -- the Communication, Signal Processing and Machine Learning group, the Speech Research group, the Microwave and RF research group -- leading the way. As for your career, as Baba Ranchoddas said "Pursue excellence, and success will follow", as the alumni who worked/working at Qualcomm, Dolcera, Hughes Network Systems would validate. Hope to see you in DA soon, Knowledge is Leadership!

The Right Career
Where the Degree can Take you

Placements

The Placement Cell at DA-IICT works professionally with the Industry to explore opportunities for DA-IICT graduates for placements. The Cell makes its best efforts to reach out to all sub-sectors of the industry in order to ensure that DA-IICT graduates spread across the industry. DA-IICT has hence contributed to the industry by successfully delivering fresh recruits who have contributed continuously to the growth of the industry by being a part of the top-notch organizations. The MTech CS-ML students will additionally possess skills that match the job requirement at the companies such as Broadcom, Qualcomm, Nokia, Ericsson, Huawei, NEC, Cisco, Apple, Intel, Rhode & Schwartz, National Instrumets, Keysight/Agilent, Samsung, TCS Innovation Labs, Dolcera Private Ltd, Altran India, Sasken technologies, Lekha Wireless, Saankhya Labs, Astra Rafael, Comsys, Truminds Software Systems

http://placement.daiict.ac.in/

Alumni Network

The DA-IICT Alumni Association exists to create and maintain a life-long association between the Institute and its alumni. The Association works to connect alumni, support students and build an extraordinary Institute experience through a diversity of events and celebrated traditions. The mission of the Association is to cultivate strong bonds between alumni, students and the Institute, to keep alumni acquainted, and create a network enabling them to remain involved with their alma mater.

https://daiict.almaconnect.com/

Employment Status of 2021 Batch

- Three graduates of this degree program have opted to pursue PhD degree
- One graduate is currently employed as a JRF at DA-IICT
- Of the remaining students of 2021 graduates, everone with CGPA greater than 6.5 has received a job offer (two students having the CGPA less than 6.5 are yet to be placed)
- Several graduates have received **multiple job offers**
- Several graduates have received **a job offer with the sign-on bonus and the stock grant**
- The highest salary offered is **INR 15 lakhs per annum**
- The median salary is **INR 11 lakhs**
- The students have found employment with the companies such as Qualcomm, Altiostar, Sankhya Labs, Truminds, Samsung Research Labs, Opshub, etc.

Students opting for Higher Studies (For MS & PhD)

CMU, Georgia Tech, MIT, ASU, Cornell Univ, Maryland, Colorado Boulder, Univ. of California, Texas A&M, Univ. Oxford UK, John Hopkins, Ecole Polytechnic de Montreal Canada, ISEP France

Campus Life

DA-IICT is spread over 50 acres of land in Gandhinagar, Capital City of Gujarat. The DA-IICT campus is caringly planned and designed as an environmentally conscious campus in the country. The architecture of DA-IICT is functional, but what surrounds it is a fascinating garden. The entire design is oriented towards preserving the environment. The campus with trees, lawns and bushes bearing green leaves and exotic flowers surrounding the buildings and pathways instils environment consciousness among students and enrich their learning. The campus also has a herb garden with species of rare medicinal plants.

The landscape was planned and developed in a manner that no rainwater is lost. The irrigation for campus garden and lawns is carried out with recycled water. Its solid waste management system churns out organic fertilizer out of dry leaves, vegetable and food waste generated from food courts.

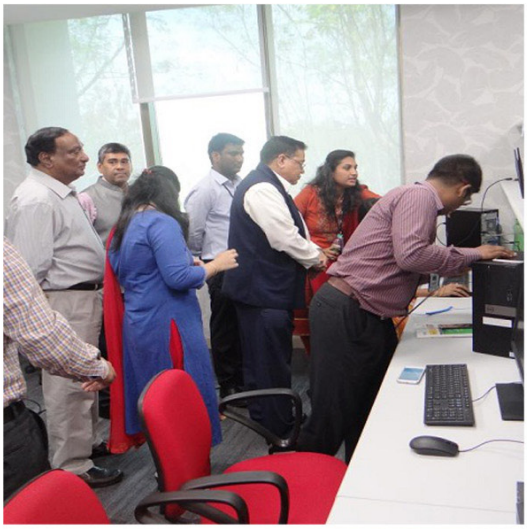
The campus is a haven for bird-watchers, with a variety of species of birds being spotted.

DA-IICT can be reached in about 30 minutes from Sardar Vallabhai Patel International Airport and the Central Railway Station located in Ahmedabad.

Campus Life

Campus Life at CR Rao Institute

CR Rao AIMSCS is located in the University of Hyderabad (UoH) Campus in Hyderabad, which is a city for Multinational Companies, Research Organizations and industries in Telangana. The institute is a 5acre unit in the UoH campus which is 2300-odd acres, has a large area under forest cover, with two perennial and three seasonal lakes, as well as rock formations characteristic of the Deccan. It is home to 734 plants, 10 mammals, 15 reptiles and 220 birds' species (at last count). Notable animals include spotted deer, hares, peacocks, porcupines and wild boar. The campus also has a protected megalithic site. The institute is having state of Art lab facilities of Wireless Communications Lab, Advanced Wireless Communications and IoT lab, Computer Networks and Android Lab, High Performance Computing Lab of 100 Teraflop system (CPU+GPU) with 100TB HPS Storage facility, Machine Learning and Artificial Intelligence Lab. The institution has been working in the Machine Learning, Cryptography and Cryptanalysis, wireless communications and Computer Networks domain with respect to security analysis in GSM, 4G-LTE, VoLTE, 5G, IoT, Wi-Fi, and Satellite communications. CR Rao AIMSCS can be reached in about 30 minutes from Rajiv Gandhi International Airport and the Railway Station located in Hyderabad.





Dhirubhai Ambani
Institute of Information and Communication Technology

Near Indroda Circle, Gandhinagar, Gujarat, India 382007.
Tel.:+91 79 6826 1700 I Fax: +91 79 6826 1710 I Web: www.daiict.ac.in