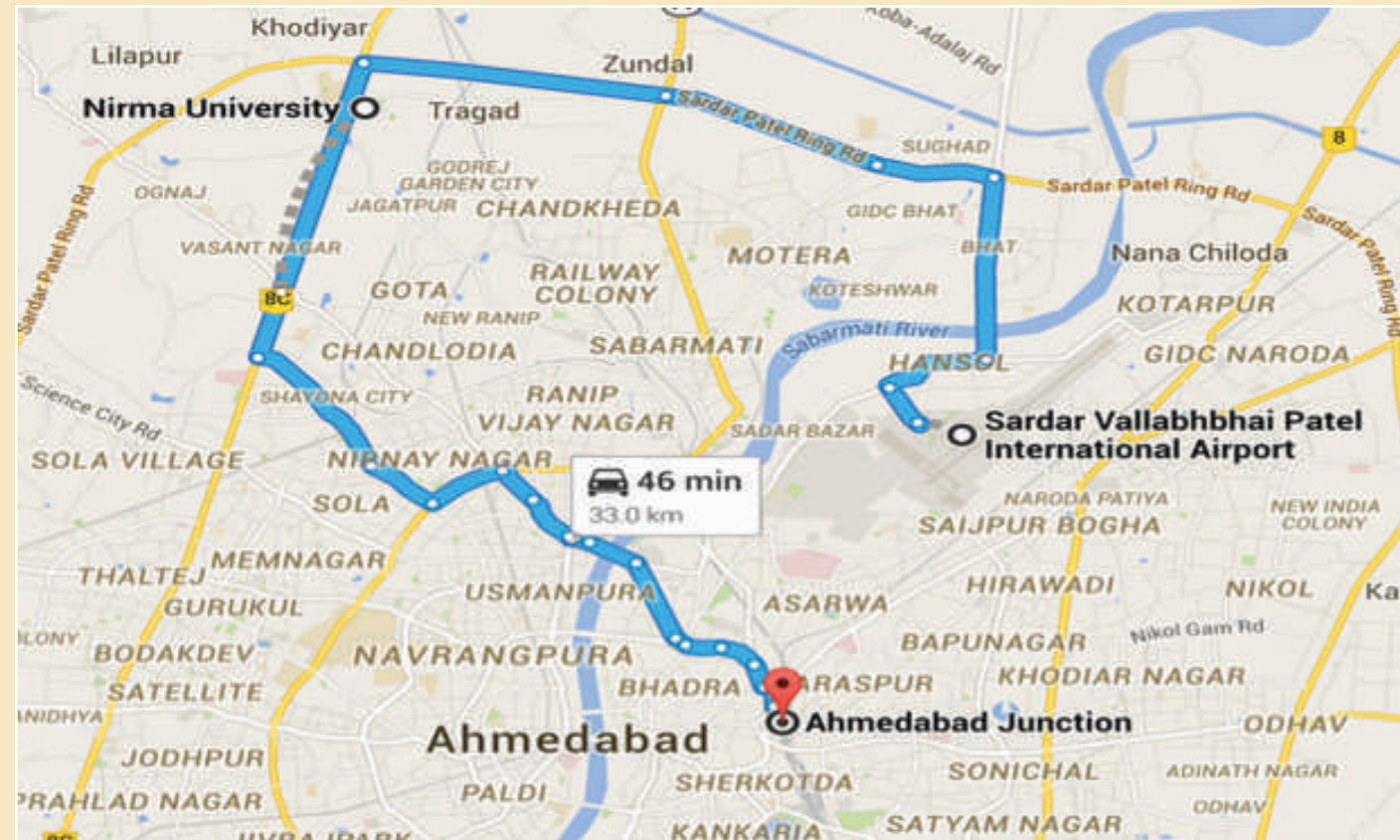


## CONFERENCE LOCATION

The Nirma University is located in peaceful and sylvan surroundings, on Sarkhej Gandhinagar highway (about 17 km from Ahmedabad railway station and 10 km from the Ahmedabad Air-port) in Ahmedabad, Gujarat State of India.

Ahmedabad, one of the liveliest cities and a major industrial hub in India, had often been called the 'Manchester of the East'. Ahmedabad is the largest city in Gujarat with a population of about 5 million. The city has developed itself into a leading industrial centre and has become economic capital of Gujarat. Vibrant Gujarat is an example to prove this. The city has many places to visit, like Science City, Akshardham Temple, Gandhi Ashram, Adalaj Vav (step well) etc. The weather of Ahmedabad is very pleasant during the month of November.



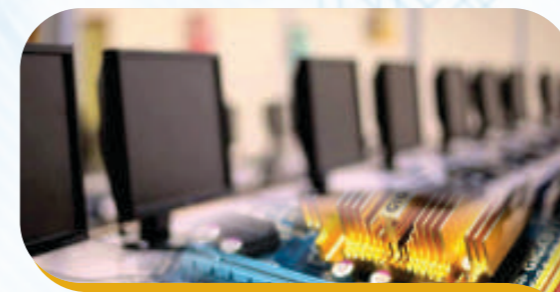
Address for correspondence:  
Conference Chair - NUICONE-17  
Institute of Technology, Nirma University  
Sarkhej-Gandhinagar Highway,  
Ahmedabad- 382 481, Gujarat, India  
Ph: +91-79-30642540  
Conference Website: <http://www.nuicone.org>  
Email: [nuicone@nirmauni.ac.in](mailto:nuicone@nirmauni.ac.in)



# NUICONE 2017

## 6<sup>th</sup> Nirma University International Conference on Engineering

(November 23-25, 2017)



### In Association with





## ABOUT NIRMA UNIVERSITY

Nirma University is one of India's leading universities based in Ahmedabad (Gujarat). The University was established in the year 2003 as a Statutory University under a special act passed by the Gujarat State Legislative Assembly. It is recognized by the University Grants Commission (UGC) under Section 2 (f) of the UGC Act. The University is accredited Grade A by National Assessment and Accreditation Council (NAAC). The University is a member of Association of Indian Universities (AIU) and the Association of Commonwealth Universities (ACU).

**Dr Karsanbhai K. Patel**, Chairman, Nirma Group of Companies and Chairman, NERF is the President of the University. Functioning under the aegis of NERF, the University consists of Faculty of Engineering and Technology, Faculty of Management, Faculty of Pharmacy, Faculty of Law, Faculty of Science, Faculty of Architecture, Faculty of Doctoral Studies and Research, Faculty of Design and Faculty of Commerce.

## ABOUT INSTITUTE OF TECHNOLOGY

Institute of Technology, Nirma University, started in 1995, was the first self-financed engineering college in Gujarat. Within 21 years of inception, Institute of Technology is a leading hub of education, offering multidisciplinary undergraduate, postgraduate and Ph.D. programmes in engineering which are rated highly by accreditation agencies, industry, business magazines and students.

The Institute is ranked within top 25 self-financed engineering colleges of India in the survey conducted by various rating agencies. The faculty members and students of the Institute have won many prestigious awards and bring laurels to the institute such as ROBOCON Competition (7 times National Champion and represented India Internationally at Japan, Thailand and Malaysia.), SAE-BAJA All Terrain Vehicle Competition – "Go Green" and "Raftar" Awards at National level, 3rd prize in ELECRAMA project national level competition, regularly winning international/national level scholarships and awards like DAAD, ISA-PMCD scholarships, project competitions by IEEE, FreeScale, Motorola etc .

The Institute is located in peaceful and sylvan surroundings of Ahmedabad city in the heart of Gujarat. The Institute provides disciplined, serene and conducive environ for reflection, repose and research. The ardent pursuit of knowledge by the young aspirants leads to knowledge generation and innovative solutions for the community and society. The Institute is now aiming to emphasize on Outcome Based Education (OBE), Experiential Education (through Project Based Learning), research in thrust areas with translational impact, and the creation of engineers as leaders in society.

It has a dynamic curriculum, robust and talented pool of faculty members, and state of art infrastructure in all the departments. It is well known for imparting quality education, active research and also in nurturing students for holistic development.

## ABOUT THE CONFERENCE

Nirma University International Conference on Engineering NUICONE is a flagship event of the Institute of Technology, Nirma University, Ahmedabad. This conference follows successful organization of four national conferences and five international conferences in previous years. Last conference of this series NUICONE-2015 was very successful with more than 570 research papers submitted, out of which approx. 171 papers were down-selected and presented after the rigorous reviews including plagiarism checks and blind-fold technical reviews by multiple reviewers. The expert speakers and conference delegates were from all across India and abroad covering researchers and eminent experts from academia, industry such as GE, Mitsubishi, ATE India, Linde etc. and government R&D organizations like IPR, ISRO, PRL and BISAG.

Upcoming NUICONE-2017 is being planned with a focal theme of "Technology Driver- The Engine for Growth". It is a multi-conference with many inter-disciplinary technical themes encompassing and enabling a broad researchers from broad range of disciplines. Besides, NUICONE-2017 will also have exciting new set of events especially to enable and attract increased participation by practicing engineers, technologists and technopreneurs from industry through special knowledge sharing sessions involving applied technical papers by industry participants based on case-study applications, white-papers, panel discussions, industrial exhibitions of innovations and technology products etc. Major attraction are pre conference tutorials, technical papers, plenary sessions and white paper presentation by practicing engineers.

## CALL FOR PAPER

Faculty-members from academia, practicing professionals and researchers from industry and government organizations, and M.Tech/PhD scholars from any branches of engineering, applied mathematics and humanity from across the globe are invited to submit and present their research work in the following areas.



## INTERDISCIPLINARY THEMES

Researchers from industry and academia are invited to present their research work in the following areas.

### 1. **Autonomic Computing: Architectural Challenges and Solutions**

Cluster and Grid computing, Cloud computing, Enterprise software and services, Multicore systems, Internet of things and embedded systems, Design issues addressing Architectural challenges of Autonomic computing and its solutions, Algorithms, Theory and foundations of Autonomic computing, Applications and current trends.

### 2. **Networking Technologies: Performance and Security Challenges**

Wired networks, Software defined networking, Wireless networks, Ad-hoc networks, Sensor networks, Vehicular area networks, Delay tolerant networks, Pocket switched networks and Mobile social networks including aspects of performance enhancement and security.

### 3. **Next Generation Pattern Analysis**

The theme encompasses novel techniques for pattern analysis in domains including computer vision, image processing, speech analysis and document analysis. It also covers usage of various existing approaches such as statistical techniques, neural networks, genetic algorithms, fuzzy techniques and machine learning for pattern analysis applications in mentioned domains.





#### **4. Electronic Communications and Signal Processing**

Contributions based on performance analysis, experimental development and simulation in the areas of Optical communication, Wired/wireless communication and networks, RF and antenna systems, Image, Speech, Text and Video processing are invited.

#### **5. VLSI Design**

Contributions based on design and development, simulation, application, testing, verification and measurement in the areas of analog and digital VLSI design, testing and verification, system on chips, power and energy aware designs are invited.

#### **6. Innovative Electronic Circuit Design**

Contributions based on electronic circuit on any innovative ideas in the real time applications are invited.

#### **7. Latest Trends in Electrical Power Systems**

Smart grid, WAMS, grid challenges, grid stability and restructuring, grid optimization, transmission planning and design, distributed generation – reliability and grid security, new frontiers in fault detection and mitigation, developments in switchgear and relaying, artificial intelligence applications in power systems, issues and development in high voltage and insulation engineering, renewable integration.

#### **8. Control of Power Electronics Converters and Drives**

Control strategies in power electronic systems, technological advances in converters, UPS, SMPS, topology enhancements and changes, multi-level converters for high-power applications, passive and active power filters, improvements in drive controls, DSP applications in power electronics, HVDC transmission and FACTS, power quality issues and their mitigation techniques, energy storage, electric vehicles.

#### **9. Advanced Electrical Machines and Apparatus**

Design, modelling, simulation and control of advanced electrical machines, fault analysis and protection of electrical machines, testing and condition monitoring of electrical equipment, etc.

#### **10. Control and Automation**

Researchers from industry and academia are invited to present their research work in the area of Process Modelling, Simulation, Robot Dynamics, Control Algorithms, Vision based Control, Industrial Automation, Control and Optimization under this theme. The present theme also focuses on Fault Detection and Diagnosis. Research on contemporary issues related to process industries are invited under this theme. Apart from above mentioned topics, challenges and solutions of factory automations are also expected under this theme.

#### **11. Recent Trends in Applied Mathematics**

Research in the Mathematics is a key element for the advancement of all areas of science and technology. Being one of the vital areas of science in itself, Pure and Applied Mathematics works in tandem in all the domains of engineering and technology. Moreover, research areas like mathematical modeling of industrial processes. Need of the hour is to cultivate and sustain core research capability, and at the same time cross the borders to promote transformative and interdisciplinary research.

#### **12. Recent Trends in Teaching-Learning in Engineering Classrooms**

It is a fact that university teachers are trained researchers but not educators. More than any other time, this is the time when innovations and blended form of teaching-learning is incorporated while imparting classroom teachings resulting into astonishing insights about how people learn. The theme aims to serve as the melting pot and seminal platform where educators, researchers and practitioners will come together to exchange, learn and relearn about this emerging field. The theme will encompass ideas related with Innovative methods in curriculum design and delivery, Social media and teaching-learning, Blended Learning/MOOCs in Engineering Education, Assessing the assessment, Futuristic Trends in Engineering Education, Entrepreneurship and Innovation, Any other topic relevant to new and emerging Education Technology.

#### **13. Chemical Process Development and Design**

This theme focuses on new process design and development where it can suggest substantial alteration in equipment or process design or developing new catalyst or employing novel techniques like use of ultrasound or microwave, micro or nano technology.

#### **14. Technologies for Green Environment**

Quest for the development of new alternative technologies is never ending process, so this theme will provide platform for research related to various environmentally benign technologies to solve the current problems such as, treatment of effluents, environmental management, recovery & reuse of materials and other issues related to environmental problems.

#### **15. Advances in Transportation Engineering**

Pavement materials, Pavement analysis and design, Traffic operations and management, Transportation economics, Road safety and traffic awareness, Accident analysis, Transportation planning and modelling, Intelligent transportation systems, Sustainable transportation system, Public transportation system, Road construction technology, Use of Geomatics in transportation engineering

#### **16. Emerging Trends in Water Resources and Environmental Engineering**

Impact of climate change on water resources, Ground water modelling and management, Hydrological modelling and forecasting, Application of remote sensing and GIS in water resources, Irrigation planning and management, Reservoir operation and optimization, Sustainable development of water resources, Watershed management, Water quality monitoring and assessment, Environment hydraulics, Environmental impact assessment, Water and waste water treatment, Solid waste management, Air and noise Pollution, Recycle and reuse of waste.

#### **17. Construction Technology and Management**

Advanced construction materials and technologies, Construction economics, Workplace management, Life cycle assessment, Construction laws, Construction productivity, Value engineering, Safety and health management, Management practices for construction equipments and materials, Innovation in construction, Construction waste management, Building energy efficiency, BIM and life cycle project management, Contract management.

#### **18. Concrete and Structural Engineering**

Advances in cement based materials and concrete technology, Structural analysis & design of Reinforced, Steel and Pre-stressed concrete, Repair, Rehabilitation and Retrofitting of structural systems, Earthquake resistant design of structures, Computational techniques in structural engineering, Geotechnical investigations & design of structures, Smart material applications and Structural Health Monitoring, Response measurement and control of structures.

#### **19. Sustainable Manufacturing Processes**

Sustainable manufacturing seeks to profitably produce goods while minimizing a firm's environmental impact, natural resource use, and energy consumption. Under this theme, the research work related to methodologies, manufacturing processes and materials that contribute to sustainable manufacturing processes is invited.

#### **20. Design and Analysis of Machine and Mechanism**

Design and analysis of machines and mechanisms is the key for reduction of lead times from concept stage to detailed design stage. The static and dynamic analysis to ensure the functionality, safety and reliability of systems made up of different kinds of materials is backbone of successful machine design and development. The theme aims to invite original work in the area of computational methods, experimental work and analytical solutions for design and analysis of machines and mechanisms.

#### **21. Energy Conservation and Management**

Energy is the "Energy" for growth and development. The objective of Energy Management and Conservation is to achieve and maintain optimum energy procurement and utilization to minimize energy costs / waste without affecting production, comfort and quality. The articles invited under this theme are expected to be in the area of production, utilization and conservation of energy.



## Submission of Research Papers

1. The papers submitted to themes at serial number 1 to 12 will be recommended to IEEE Conference Publication Program (CPP) to include it on the IEEEExplore subject to strictly meeting and complying with IEEE guidelines and signing of IEEE copy-right transfer form. The format of the paper is given on conference website: <http://www.nuicone.org>.
2. The papers submitted to themes at serial number 13 to 21 will be published as conference proceedings with CRC press Taylor & Francis. The format of the paper is given on conference website: <http://www.nuicone.org>.
3. Soft copies of the papers in specified format should be uploaded on the conference website.
4. For the final selection, all the papers will be reviewed and scrutinized by a Technical Committee comprising of subject experts after plagiarism checks for the originality of paper.
5. Along with the final submission of the selected paper, authors are required to submit an undertaking form which implies that, the paper has not been published previously, is not under consideration for publication elsewhere, and if accepted it will not be published elsewhere in the same form.
6. One of the authors must register for the conference and present the paper, otherwise paper will not be published in the conference souvenir and proceeding.
7. Important dates
  - Paper Submission : May 14, 2017
  - Intimation of Acceptance : August 13, 2017
  - Final Camera Ready Copy for accepted papers : September 01, 2017
  - Conference dates : November 23-25, 2017

## REGISTRATION

Registration and presentation by at least one of the authors is must to consider the paper as included and published in the conference souvenir and proceedings. The registration process will be online from the conference web-site

- Indian Delegate Rs. 6000/- + Service Tax
- Indian Students (non-sponsored) Rs. 2000/- + Service Tax
- Industry Delegate Rs. 8000/- + Service Tax
- Foreign Student Delegates US \$200 + Service Tax
- Foreign Delegate US\$ 300 + Service Tax

Accommodation is not included but the organizing committee can help the delegates in arranging suitable accommodation in the Nirma University guest house (limited numbers) and nearby hotels/hostels on the payment basis:

- The delegate fee includes day time hospitality during conference days, proceedings, and kit and Banquet Dinner.
- Dully filled online registration form should be supported by a bona fide certificate for Students.
- The Indian authors should pay the registration fees through NEFT/RTGS along with the duly filled registration form, bona fide certificate (if applicable) and signed copy-right form.
- For foreign delegates, the account details for transferring registration fee is available on the conference website.
- Non-author delegates are also welcome to register for the conference.

For any details, please send your email to [nuicone@nirmauni.ac.in](mailto:nuicone@nirmauni.ac.in)

## EXHIBITION on GREEN TECHNOLOGY and INNOVATIONS

It is aimed to bring awareness about the GREEN TECHNOLOGY and INNOVATIONS among the researchers, academia, industry and students. Where the industry and research organizations will exhibit the latest developments and applications in the area of solar energy, wind energy, rural technology, sustainable environment and indigenous innovations.

## Pre-Conference Tutorials

There would be great experience of learning with the experts from industry / academia like last conference through the Pre-Conference tutorials. The tutorials will be on the novel topics related to technology and innovations like Computational Fluid Dynamics (CFD), Lean Six Sigma, SoC - NoC Test Challenges, Remote Sensing Image Processing using python, FPGA for Hardware/Software Developers, Analog IC Design etc.

For more details visit the conference website.

## ORGANIZING COMMITTEE

<b>Chief Patrons:</b>	Shri K K Patel, Vice President, Nirma University Dr Anup Singh, Director General, Nirma University		
<b>Patron:</b>	Dr Alka Mahajan, Director, IT, NU		
<b>Conference Chair:</b>	Dr B A Modi, IT, NU		
<b>Conference Co-Chairs:</b>	Dr Parul Patel, IT, NU Dr Y P Kosta, Ex-officio, IEEE Gujarat Section		
<b>Members:</b>	Shri D P Chhaya (Director, A&GA, NU) Dr G R Nair (Executive Registrar, NU) Dr P N Tekwani                      Dr R N Patel                      Dr S S Patel Dr Sanjay Garg                      Dr P V Patel                      Dr D K Kothari Dr Dipak Adhyaru                      Dr Madhuri Bhavsar                      Dr J P Ruparelia		

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- Prof. Raghu Echempati, Kettering University, Flint, MI USA
- Shri Sanjay Desai, CEO, RBD Engineers
- Shri Rajesh Sampat, Vice President, Inspiron Pvt. Ltd, Ahmedabad, INDIA



**A brief report on the Nirma University International Conference on Engineering (NUiCONE)**

Conference Number: 41160

Conference Name 2017 Nirma University International Conference on Engineering (NUiCONE)

Conference Start Date: 11/23/17

Conference Venue- Institute of Technology, Nirma University, Ahmedabad, Gujarat, India

The main theme of the conference was Technology Drivers The growth engine and was also focussed and green technology and innovations to sensitise the researchers, industry professionals and students towards the environment issues.

There were nineteen identified themes which can cater the diversified needs of academics and industries: Autonomic Computing; Architectural Challenges and Solutions, Networking Technologies; Performance and Security Challenges, Next Generation Pattern Analysis, Electronic Communications and Signal Processing, VLSI Design, Innovative Electronic Circuit Design, Latest Trends in Electrical Power Systems, Control of Power Electronics Converters and Drives, Advanced Electrical Machines and Apparatus, Control and Automation, Chemical Process Development and Design, Technologies for Green Environment, Advances in Transportation Engineering, Emerging Trends in Water Resources and Environmental Engineering, Construction Technology and Management, Concrete and Structural Engineering, Sustainable Manufacturing Processes, Design and Analysis of Machine and Mechanism and Energy Conservation and Management.

**Papers received: 290**

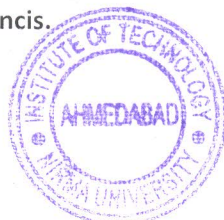
These papers were checked for plagiarism, double blind review and language correction. Only 90 papers in various disciplines were accepted. Final submission of the papers and presentation is as shown in the table below.

**Papers Submitted: 75**

Track	Reg. Paper
Mech	25
Civil	26
Chem	5
EC	4
IC	5
EE	5
CSE	5
Total	75*

Out of the papers presented in the conference, 19 papers will be published with the IEEE and 56 papers will be published with Taylor and Francis.

  
B. A. Modi



  
Director, IT



### **Total Participation: 589**

Paid Registrations: 86 (Nirma 33, Gujarat 40, India 12, outside India 01)

Industry: 07, Research Organisation: 2, Academics: 77

Complimentary Invited participants from industry and research organisations: 52

Faculty members from the parent institute: 212

Complimentary M.Tech. students: 244

Apart from the oral presentation of peer reviewed technical research papers in parallel tracks, we have also organised Panel Discussion. Expert talks Industry Professionals which are scheduled explicitly on second day of conference. These special sessions were arranged with talks on current topics of multidisciplinary interest. We are indeed grateful to have prominent speakers for the invited talks in each theme. The schedule of the conference is attached alongwith.

Further, this year, the conference has been linked with many reputed associations of various engineering institutions like IEEE, Taylor and Francis, IE(India), ISA, IGBC, ASHRAE, CSCE and GUJCOST. We are also thankful to the sponsors for their generous support.

### **The Inauguration of the conference was graced by**

Padma Vibhushan Shri Dr. Anil Kakodkar,  
President, National Academy of Sciences India;  
Chairman, Rajiv Gandhi Science & Technology Commission; Member & Former Chairman Atomic Energy Commission as a Chief Guest and

Dr. A. Jayaraman  
Vice President, International Committee on Space Research-COSPAR, Paris  
Former, Director, National Atmospheric Research Laboratory, ISRO as a guest of honour and keynote speaker.

Was preside over by Padmashri, Dr. Karshanbhai Patel, President, Nirma University.

### **Valedictory Function:**

**Mr. S. Sriram**, General Manager - Marketing at Mitsubishi Electric India Private Ltd. Was the chief guest of the function and was presided over by Shri. K. K. Patel, Vice President, Nirma University.

### **Exhibition (23-25 November 2017) on Green Technology and Innovations**

Institute of Plasma Research, Gandhinagar, BARC Mumbai & RRCAT Indore (research centres under DAE) will be displaying technologies on Plasmas & applications, Indian LASER and India's first 2 GeV particle Accelerator INDUS-II program.

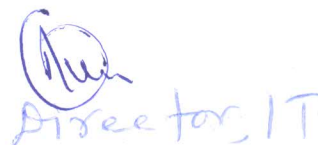
J K Lakshmi Cements will exhibit in-house innovations

GIAN (Gujarat Grassroots Innovations Augmentation Network) will exhibit grass root innovations

PCRA (Pollution Control and Regulatory Authority) will bring awareness towards pollution and environment.

  
B.A. Modi

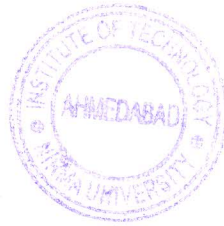


  
Director, IT

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Director, IT