Government MCA College
Maninagar (EAST), Ahmedabad

प्रस्तुता SOUVENIR

॥ ज्ञानम् परम धिमही ॥

Quest for knowledge is the one act to be done.

જ્ઞાનની ઉપાસના જ કરવા જેવું કાર્ય છે.

https://www.gmca.ac.in

Government MCA College
Maninagar (EAST), Ahmedabad

Vision:

Provide value-based quality education for computer science applications which enable students to solve real-life problems of society.

Mission:

M-1 To equip our students with good knowledge, skills and attitude to solve real – life problems in the domain of computer applications.

M-2 To establish industry-academia interaction to facilitate the students to work proficiently in the industrial environment.

M-3 To imbibe high moral values and professional ethics.

M-4 To provide conducive environment so as to achieve excellence in teaching-learning, and research and development activities.

Prof. (Dr.) Chetan B. Bhatt
Principal

Message from the Principal

Dear Students, Faculty, and Esteemed Stakeholders,

It is with great pride and a deep sense of responsibility that I welcome you to the inaugural edition of the 'PRASHTUTA', the Newsletter of the Government MCA College. Our institution, envisioned under the visionary leadership of Honourable Prime Minister Shri Narendra Modi during his tenure as Chief Minister of Gujarat, stands as a beacon of knowledge and innovation, aligned with India's national missions—Digital India, Startup India, Make in India, and Skill India.

At Government MCA College, we are unwavering in our commitment to providing the highest standards of quality education. Through a rigorous, industry-aligned curriculum and state-of-the-art resources, we strive to deliver a transformative learning experience that equips students with technical expertise and real-life problem-solving abilities. Our goal is to nurture well-rounded individuals who not only excel in their fields but also act as responsible citizens dedicated to the nation's progress.

Our mission extends beyond academics; we seek to instil in our students the values of integrity, perseverance, and a spirit of innovation. By fostering an environment that encourages critical thinking, practical skills, and ethical responsibility, we prepare our graduates to lead with purpose and contribute meaningfully to India's technological and economic development.

This newsletter marks the beginning of a journey of shared achievements, ideas, and insights, celebrating the success of our students, faculty, and the greater community. Let us embrace this platform to learn, grow, and inspire each other in our pursuit of excellence and service to the nation.

Warm regards,

Prof. (Dr) Chetan B. Bhatt
Principal,
Government MCA College,
Maninagar, Ahmedabad

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Dr. Bhavesh B. Prajapati
Head of the Department

Message from the Head of the Department

Dear Students, Faculty, and Esteemed Stakeholders,

It gives me immense pleasure to lead the department of Master of Computer Application under the guidance and vision of Dr. Chetan Bhatt. The goal of the department is to satisfy the need of the industry and research organizations by producing informative and committed professionals. This is achieved by imparting in depth theoretical knowledge during the lectures followed by hands-on in state-of-the-art laboratories.

The excellent infrastructure, teaching faculties of the best kind ensuring quality education such as interaction among students, parents, and staff, along with a Training and Placement Cell ensures a bright future to its students. Institute has active SSIP cell which promotes entrepreneurship among students as per the Student Startup and Innovation Policy of Gujarat Government. Thus, we are confident that our Professionals will emerge as assets not only to this institution and to the organization they belong, but also to the country at large.

The department conducts various workshops, expert talks, and additional training Programmes on recent trends in Computer Applications in collaboration with industries and academia for the benefit of faculty and students. We have Cyber Shield Forum which works to spread awareness regarding cyber awareness among students and citizens.

Department also constitutes student club “Ignited Youth Forum”, which is driven by students for technical and non-technical events. Sports and Cultural week is most awaited yearly event promoting extracurricular and holistic development of students.

GMCA_PRASTUTA is our first attempt to preserve our achievements and publish its all activities of last five years. We have planned to do this more frequently.

The Department not only aims to make our students technically sound and knowledgeable but also to nurture their wisdom and make them a better and responsible human being. We hope that we will continue to deliver our best to serve the society and mankind. It is also expected that our students will continue to pass on the skills which they have developed during their stay at this department to the whole of the world for a better society.

Warm regards,

Dr. Bhavesh B. Prajapati
Head of the Department,
Government MCA College, Maninagar, Ahmedabad.

Teaching Staff

Name: Prof. (Dr.) Chetan B. Bhatt
Designation: Principal
Qualification: Ph.D. (Engineering)
Email: chetan_bhatt@gmca.ac.in
Experience: 33 years
Date of Joining Dept. of Technical Education: 02 Nov 1991
Research Interest: AI-ML in process control, health care, agriculture, and education; cyber physical systems; Indian Knowledge Systems–Vedanta Philosophy and Cognitive Science; Instrumentation in Food Quality Analysis; Engineering Pedagogy;

Name: Dr. Bhavesh B. Prajapati
Designation: Head of the Department
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Email: b.b.prajapati@gmca.ac.in
Experience: 22 years
Date of Joining Dept. of Technical Education: 18 February, 2005
Research Interest: Quantum Information Theory, Quantum cryptography, Information Security

Name: Parth A. Goswami
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Experience: 14 years
Date of Joining Dept. of Technical Education: 07 May 2011
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Name: Ms. Nirali R. Sheth
Designation: Lecturer in Computer Engineering
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Email: niralisheth88@gmca.ac.in
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Date of Joining Dept. of Technical Education: 27 May, 2011
Research Interest: Web Application development, Mobile application development, Database Administrator, Full stack development

Teaching Staff

Name: Ms. Nisha K. Chavda
Designation: Lecturer
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Experience: 15 years
Date of Joining Dept. of Technical Education: 05 November,2016
Research Interest: Computer network, cryptography, Network & Information Security, Image Processing

Name: Prof. D. D. Modi
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Teaching Experience: 6.5 years
Industry Experience: 3.5 Years
Date of Joining Dept. of Technical Education: 08th May, 2018
Research Interest: Big Data, Video Streaming, Machine Learning.

Name: Dr. Jaimin B. Dave
Designation: Lecturer
Qualification: Ph.D. (Instrumentation and Control Engg.)
Email: jaimindave1212@gmca.ac.com
Experience: 10 years
Date of Joining Dept. of Technical Education: 12 September, 2018
Research Interest: Sensor Signal Conditioning, Embedded Systems, Decision Support System.

Non-Teaching Staff

Name: Sanjay G. Kacha
Designation: System Analyst at CTE and Computer Programmer at GMCA
Qualification: M.C.A.
Email: sa-dte@gujarat.gov.in, sgkacha@gmca.ac.in
Experience: 20 years
Date of Joining Dept. of Technical Education: 05 January, 2006
Research Interest: Network Forensics and Information Security

Name: Dikshitkumar. S. Jadav
Designation: Head Clerk
Qualification: P.T.C.
Email: dikshit333@gmail.com
Experience: 11 years
Date of Joining Dept. of Technical Education: 16, January, 2013

Faculty Training Details

No.	Name of Faculty	Name of the Training	Organizing Institute	Start Date	End Date
1	Dr. Chetan B. Bhatt	Intellectual Property Rights	iHub - Gujarat	14-08-2020	14-09-2020
2	Dr. Chetan B. Bhatt	Course Design in Context of NBA (Conducted)	Government MCA College	20-01-2020	24-01-2020
3	Prof. B. B. Prajapati	Fundamentals and Applications of IOT Big Data and Machine Learning	L.D. College of Engineering	28-May-18	08-06-2018
4	Prof. B. B. Prajapati	Applied Machine Learning : A practical based approach	DTE-GUJCOST	15-Oct-18	20-Oct-18
5	Prof. B. B. Prajapati	Student Innovation and Startup	SSIP	04-Feb-19	08-Feb-19
6	Prof. B. B. Prajapati	Student Innovation and Startup	SSIP	29-Jul-19	08-Aug-19
7	Prof. B. B. Prajapati	NBA ACCREDITATION AND TEACHING-LEARNING IN ENGINEERING (NATE)		27-Jan-20	17-Apr-20
8	Prof. B. B. Prajapati	COMPREHENSIVE ONLINE INTELLECTUAL PROPERTY RIGHTS (IPR)	i-HUB Ahmedabad	07-Jun-20	14-Sep-20
9	Prof. B. B. Prajapati	E-Content Development (UDAYAM)	KCG, Ahmedabad	28-Jul-20	18 Aug, 2020
10	Prof. B. B. Prajapati	Course Design in Context of NBA	Government MCA College	20-01-2020	24-01-2020
11	Prof. B. B. Prajapati	Nurturing Innovation and Startup Ecosystem (NISE)	i-HUB Ahmedabad	09-08-2020	23/10/20
12	Prof. B. B. Prajapati	Introduction to quantum computing: Quantum Algorithm and QISKIT	NPTEL	23/08/2021	17/09/2021
13	Prof. B. B. Prajapati	Python for Data Science	NPTEL MOOC	23-Jan-23	17-Feb-23
14	Prof. B. B. Prajapati	Public Speaking	NPTEL MOOC	24-Jul-23	13-Oct-23
15	Prof. B. B. Prajapati	Effective Engineering Teaching In Practice	NPTEL MOOC	22-Jan-24	16-Feb-24
16	Prof. B. B. Prajapati	Enhancing Soft Skills and Personality	IIT Madras	19-Feb-24	12-Apr-24
17	Prof. B. B. Prajapati	Industrial Training: Applications of Satellite Communication, Spatial Data analysis and Project Management using agile practices	BISAG, Gandhinagar	22-Jul-24	05-Aug-24
18	Prof. B. B. Prajapati	Train the trainer programme on Effective Implementation of NEP 2020 in Technical and Professional institutes of Gujarat.	CTE, Gandhinagar and NITTTR, Chandigardh	14-Oct-24	18-Oct-24
19	Prof. P. A. Goswami	GUIDANCE, COUNSELLING AND MENTORING SKILLS	NITTTR BHOPAL	29-Jul-19	02-08-2019
20	Prof. P. A. Goswami	COMPREHENSIVE ONLINE INTELLECTUAL PROPERTY RIGHTS (IPR)	i-HUB Ahmedabad	06-Jul-20	14-Sep-20
21	Prof. P. A. Goswami	E-Content Development(UDAYAM)	KCG, Ahmedabad	28-Jul-20	18-Aug-20
22	Prof. P. A. Goswami	Online FDP on "Internet of Things (IoT)"	AICTE Training And Learning (ATAL) Academy	26-Oct-20	30-Oct-20
23	Prof. P. A. Goswami	Programming, Data Structures And Algorithms Using Python	NPTEL-AICTE MOOC FDP	01-Jan-21	31-Mar-21
24	Prof. P. A. Goswami	Enhancing soft skills and personality	NPTEL-AICTE MOOC FDP	01-Feb-21	30-Apr-21

No.	Name of Faculty	Name of the Training	Organizing Institute	Start Date	End Date
25	Prof. P. A. Goswami	Online FDP on “Inculcating Universal Human Values in Technical Education”	AICTE FDP	18-Oct-21	22-Oct-21
26	Prof. P. A. Goswami	Public Speaking	NPTEL MOOC	24-Jul-23	13-Oct-23
27	Prof. P. A. Goswami	Soft Skill Development	NPTEL MOOC	22-Jul-24	13-Sep-24
28	Prof. P. A. Goswami	Train the trainer programme on Effective Implementation of NEP 2020 in Technical and Professional institutes of Gujarat.	CTE, VSK Gandhinagar and NITTTR, Chandigardh	14-Oct-24	18-Oct-24
29	Prof. P. A. Goswami	Communication Skills Modes & Knowledge Dissemination	NITTTR Chandigarh MOOC	Jan-23	Jun-23
30	Prof. N. R. Sheth	Course Design in Context of NBA	Government MCA College	20-Jan-20	24-Jan-20
31	Prof. N. R. Sheth	COMPREHENSIVE ONLINE INTELLECTUAL PROPERTY RIGHTS (IPR)	i-HUB Ahmedabad	06-Jul-20	14-Sep-20
32	Prof. N. R. Sheth	E-Content Development (UDAYAM)	KCG, Ahmedabad	28-Jul-20	18-Aug-20
33	Prof. N. R. Sheth	Online FDP on "Internet of Things (IoT)"	AICTE Training And Learning (ATAL) Academy	26-Oct-20	30-Oct-20
34	Prof. N. R. Sheth	Security & Privacy:Trends and Directions	AVPTI RAJKOT	28-Apr-21	05-Apr-21
35	Prof. N. R. Sheth	The Joy of Computing using Python	NPTEL	26-Jul-21	15-Oct-21
36	Prof. N. R. Sheth	Enhancing soft skills and personality	NPTEL-AICTE MOOC FDP	21-Feb-22	15-Mar-22
37	Prof. N. R. Sheth	Futuristic Technologies in the field of IT	L. D. COLLEGE OF ENGINEERING	12-Sep-22	23-Sep-22
38	Prof. N. R. Sheth	Python for Data Science	NPTEL MOOC	22-Jan-23	16-Feb-23
39	Prof. N. R. Sheth	Introduction To Algorithms And Analysis	NPTEL MOOC	24-Jul-23	13-Oct-23
40	Prof. N. K. Chavda	COMPREHENSIVE ONLINE INTELLECTUAL PROPERTY RIGHTS (IPR)	i-HUB Ahmedabad	06-Jul-20	14-Sep-20
41	Prof. N. K. Chavda	E-Content Development(UDAYAM)	KCG, Ahmedabad	28-Jul-20	18-Aug-20
42	Prof. N. K. Chavda	Online FDP on "Internet of Things (IoT)"	AICTE Training And Learning (ATAL) Academy	26-Oct-20	30-Oct-20
43	Prof. N. K. Chavda	NBA ACCREDITATION AND TEACHING-LEARNING IN ENGINEERING(NATE)	NPTEL	27-Jan-20	17-Jan-20
44	Prof. N. K. Chavda	Security & Privacy:Trends and Directions	AVPTI RAJKOT	28-Apr-21	04-May-21
45	Prof. N. K. Chavda	ICT in teaching learning	NITTTR BHOPAL	26-Jul-21	31-Aug-21
46	Prof. N. K. Chavda	Academic & research report writing	NITTTR	31-Jan-22	31-Mar-22
47	Prof. N. K. Chavda	Ethical Hacking	NITTTR	23-Jan-23	14-Apr-23
48	Prof. N. K. Chavda	Public Speaking	NPTEL MOOC	24-Jul-23	13-Oct-23
49	Prof. N. K. Chavda	Soft Skill Development	NPTEL MOOC	22-Jul-24	13-Sep-24
50	Prof. N. K. Chavda	INDUCTIOn Phase - II	NITTTR - Ahmedabad	19-Aug-19	30-Aug-19

No.	Name of Faculty	Name of the Training	Organizing Institute	Start Date	End Date
51	Prof. D. D. Modi	COMPREHENSIVE ONLINE INTELLECTUAL PROPERTY RIGHTS (IPR)	i-HUB Ahmedabad	07-Jun-20	14-Sep-20
52	Prof. D. D. Modi	E-Content Development(UDAYAM)	KCG, Ahmedabad	28-Jul-20	18-Aug-20
53	Prof. D. D. Modi	Online FDP on "Internet of Things (IoT)"	AICTE Training And Learning (ATAL) Academy	26-Oct-20	30-Oct-20
54	Prof. D. D. Modi	NBA ACCREDITATION AND TEACHING-LEARNING IN ENGINEERING(NATE)	NPTEL	27-Jan-20	17-Apr-20
55	Prof. D. D. Modi	Python for Data Science	NPTEL MOOC	23-Jan-23	17-Feb-23
56	Prof. D. D. Modi	Public Speaking	NPTEL MOOC	24-Jul-23	13-Oct-23
57	Prof. D. D. Modi	Effective Engineering Teaching In Practice	NPTEL MOOC	22-Jan-24	16-Feb-24
58	Prof. D. D. Modi	Induction Phase - II	NITTTR - Ahmedabad	22-Aug-22	02-Sep-22
59	Prof. D. D. Modi	Enhancing Soft Skills & Personality	IIT Madras	19-Feb-24	12-Apr-24
60	Prof. D. D. Modi	Industrial Training: Applications of Satellite Communication, Spatial Data analysis and Project Management using agile practices	BISAG, Gandhinagar	22-Jul-24	05-Aug-24
61	Prof. J. B. Dave	Interwoven Intelligence: A multidisciplinary approach using AI/ML	DTE-GETRS	29-Jan-24	03-Feb-24

Research Paper Publications

No.	Name of Faculty	Title	Journal/ Conference	Level	Name of Journal/ Conference	Month of Publication	Year of Publication
1	Dr. Chetan B. Bhatt	CommonKADS Model Framework for Web-based Emergency Medicine Decision Support System	Journal	Inter-national	Global Journal of Engineering Science and Researches	September	2018
2	Dr. Chetan B. Bhatt	Emergency Health Care ontology for Risk Level Detection	Journal	Inter-national	Journal of Emerging Technologies and Innovative Research	September	2019
3	Dr. Chetan B. Bhatt	Review on Conductivity an under developed method to detect milk adulteration	Journal	Inter-national	International Journal of Food and Nutritional Sciences		2022
4	Dr. Chetan B. Bhatt	An Overview of Text Translation and Text Simplification Tasks	Journal	Inter-national	Int J Intell Syst Appl Eng	February	2023
5	Dr. Chetan B. Bhatt	Milk Adultration Detection for Added Water by Conductivity	Journal	Inter-national	International Journal of Food and Nutritional Sciences		2022
6	Dr. Chetan B. Bhatt	Text Simplification Improves Text Translation from Gujarati Regional Language to English: An Experimental Study	Journal	Inter-national	Int J Intell Syst Appl Eng	January	2023
7	Dr. Chetan B. Bhatt	An Overview of Context Capturing Techniques in NLP	Journal	Inter-national	International Journal on Recent and Innovation Trends in Computing and Communication	February	2023
8	Dr. Chetan B. Bhatt	Soil Fertility Test Based NPK Fertilizer Recommendation to Winter Wheat Crop with Reference to Precision Agriculture	Journal	Inter-national	African Journal of Biological Sciences	July	2024
9	Dr. Chetan B. Bhatt	Comparative Analysis of Electronics Circuit Simulation software (EDA tools) for E-learning and Assessment	Journal	Inter-national	International Journal of Computer Science Trends & Technology (IJCST)	Sep-Oct	2024
10	Dr. Chetan B. Bhatt	Simulation of low energy positron bunching in 150 MHz quarter wave resonator	Conference	National	Indian Particle Accelerator Conference-2023	March	2023
11	Prof. B. B. Prajapati	Limit of privacy and Quantum Cryptography	Journal	Inter-national	International Journal of Scientific Research in Science, Engineering and Technology	April	2018
12	Prof. B. B. Prajapati	Quantum Key Distribution: The Evolution	Chapter	Inter-national	IGI GLobal	October	2020
13	Prof. B. B. Prajapati	Quantum Cryptography and the Future of Cyber Security	Book	Inter-national	IGI GLobal	October	2020

Research Paper Publications

No.	Name of Faculty	Title	Journal/ Conference	Level	Name of Journal/ Conference	Month of Publication	Year of Publication
14	Prof. B. B. Prajapati	Anatomy of Quantum Key Distribution Protocol: A Comprehensive Analysis	Journal	Inter-national	Journal of Tianjin University Science and Technology	September	2021
15	Prof. B. B. Prajapati	Realization of relative entropy evolution in the sudarshan lindbald for two quantum systems	Journal	Inter-national	Journal of Algebric Statistic	May	2022
16	Prof. B. B. Prajapati	Realizing the Quantum Relative Entropy of Two Noisy States using the Hudson-Parthasarathy Equations	Journal	Inter-national	International Journal of Advanced Computer Science and Applications	February	2023
17	Prof. D. D. Modi	Analyzing generation and transmission of h.264 multi-bitrate stream	Journal	Inter-national	International Journal of Research and Analytical Reviews	June	2018
18	Prof. D. D. Modi	Deriving Meaning of Trending Words for Expanding Thesaurus	Journal	Inter-national	International Journal of Research in Advent Technology	March	2019
19	Prof. D. D. Modi	Comparison of Video Encoding Standards	Journal	Inter-national	Science, Technology and Development Journal	June	2021

Poster Presentation

Dr. Chetan B. Bhatt

Research work carried by Dr. Chetan Bhatt Sir is represented as poster at Indian Particle Accelerator Conference-2023 held at Mumbai during March 13-16, 2023. This poster is adjudged as best poster in conference.

Simulation of low energy positron bunching in 150 MHz quarter wave resonator

Shrikrishna Gupta[1,2], S. Mukherjee[3], D. Dutta[3], S. K. Sharma[3], K. Sudarshan[3], S. Shrotriya[4], M. Pandey[4], C B. Bhatt1[1]

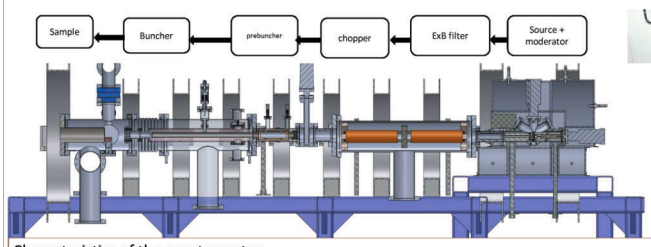
[1]Gujarat Technological University, Chandkheda, Gandhinagar, Gujarat, 382424, [2]RRF, Bhabha Atomic Research Center, Trombay, Mumbai -85
[3]Radiochemistry Division, Bhabha Atomic Research Center, Trombay, Mumbai, [4]Accelerator Control Division, Bhabha Atomic Research Center, Trombay, Mumbai

G3/357

INTRODUCTION & MOTIVATION

- Positrons, implanted in a solid, are repelled by atomic core. Hence they seek and eventually annihilate from defects.
- Thus positrons are unique probe for characterizing defects in metal/semiconductors/polymers.
- A pulsed positron beam allows one to probe the defects as a function of depth. This capability has tremendous application in 2D materials, near surface localized defects, thin films etc.

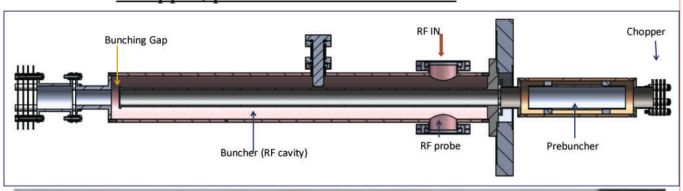
Overview of Pulsed Positron Beam at RCD



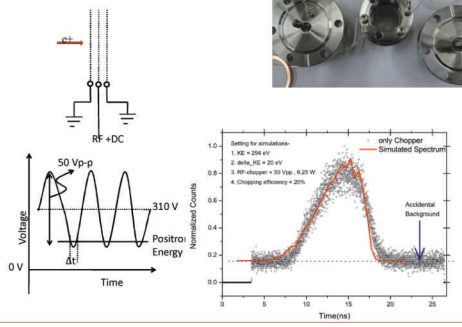
Characteristics of the spectrometer

- POSITORN ENERGY of 250 eV ; particles transported in Uniform B field of 70 G ; Final bunching done by 150 MHz Buncher running at ~ 100 W → Overall Pulse width ~ 350 ps

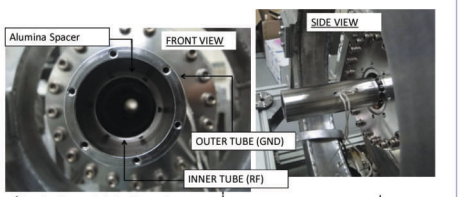
Chopper, prebuncher and Buncher



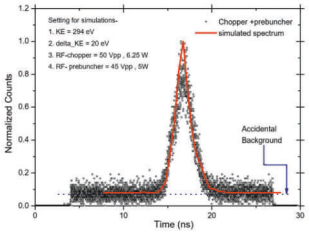
CHOPPER PROPERTIES



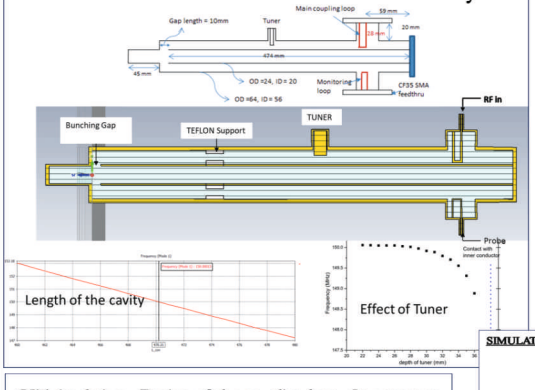
Prebuncher



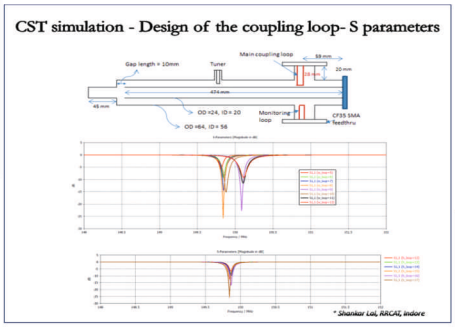
- ✓ Length of inner tube is the distance that particles travels in half time period
- ✓ Driven by 37.5 MHz sine wave
- ✓ Capacitive coupling



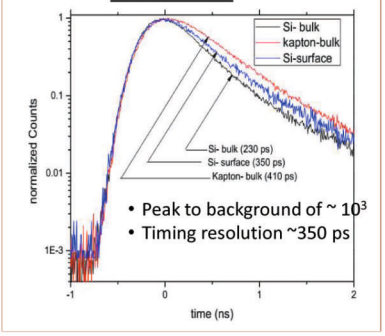
CST simulation of the buncher cavity



CST simulation - Design of the coupling loop- S parameters

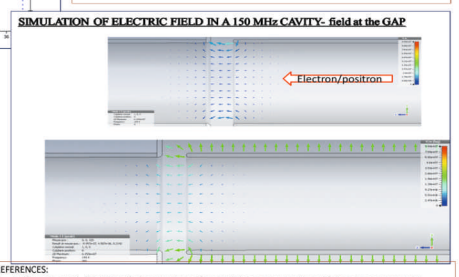


RECENT DATA



- Peak to background of ~ 10^3
- Timing resolution ~350 ps

SIMULATION OF ELECTRIC FIELD IN A 150 MHz CAVITY- field at the GAP



REFERENCES:
1. R. Suzuki, et al. "Pulsing of slow positrons for variable-energy positron lifetime spectroscopy." In Solid State Phenomena, vol. 28, p. 365. 1992.
2. S. Shrotriya et al., "Design and development of radio frequency system for pulse positron low energy beam and its electron beam trials", Journal of Instrumentation, 16(09) (2021), p.T09002.
3. www.3ds.com/cst-studio-suite/ for details of simulation code CST microwave studio (CST-MWS)
4. D. A. Dahl, SIMION 3D 7.0, INEEL-95/4043, Revision 5, 2000

* We acknowledge Dr Shankar Lal and Dr S.V.L. S. Rao for guidance in carrying out the CST simulations

e-mail: mukherjees@barc.gov.in

Scientific aspects of the Sanskrit

Dr. Chetan B. Bhatt
Principal, Government MCA College, Maninagar, Ahmedabad

Sanskrit, one of the oldest languages known to humanity, has captivated scholars for centuries with its precision, structure, and phonetic excellence. Its use is widespread in ancient texts, especially in Hindu, Buddhist, and Jain literature, and its legacy persists in the study of linguistics, science, and philosophy. Here are some of the fascinating scientific aspects that make Sanskrit unique among the world's languages.

1. Phonetic Precision and Phonology

Sanskrit's phonetic system is precise and well-organized. Each sound, or phoneme, has a unique place and manner of articulation, which is clearly defined. Sanskrit divides sound based on where they are produced in the vocal tract: guttural (कंठ्य), palatal(तालव्य), cerebral(मूर्धन्य), dental(दंत्य), and labial(ओष्ठ्य). This classification corresponds to modern phonetic terms, where sounds are categorized by the place and mode of articulation.

For example:

- **Gutturals** (ka, kha, ga) are produced at the back of the throat.
- **Dentals** (ta, tha, da) are articulated with the tongue touching the teeth.

This organized system not only aids in learning and pronunciation but also in accurate linguistic analysis. Phonetics in Sanskrit aligns with modern linguistic theory, illustrating how deeply ancient scholars understood speech production.

2. Grammar and Panini's Ashtadhyayi

The renowned grammarian Panini, who lived around the 5th century BCE, wrote the **Ashtadhyayi**, a treatise that lays out the grammar of Sanskrit. Panini's work is often considered the first formal system of grammar, and it's notably similar to contemporary models of computational linguistics. The Ashtadhyayi consists of nearly 4,000 rules that describe how sounds and words are combined to create meaningful sentences.

The structure and conciseness of Panini's grammar rules have been compared to computer algorithms. Some linguists suggest that Sanskrit grammar may have the capacity to create a programming language because of its precise syntax and structure, which ensure unambiguous sentence formation. Panini's rule-based grammar is especially notable for its use of metarules—rules about rules—a concept essential in programming.

3. Morphology and Word Formation

Sanskrit's word formation process is highly scientific, with each word formed through well-defined morphological processes. For instance:

- **Root Words**: Sanskrit words are often derived from "dhatus" or root words that carry inherent meaning.
- **Prefixes and Suffixes**: These are systematically added to root words, modifying their meanings in predictable ways.

This morphological structure gives Sanskrit an expansive vocabulary without relying on countless root words. Each root can generate numerous derivatives, allowing for precision and diversity in expression, much like modern scientific nomenclature.

4. Syntax and Semantic Clarity

Sanskrit's syntactic structure supports logical clarity and flexibility. Although it is generally a Subject-Object-Verb (SOV) language, its use of case endings allows for a more flexible word order without losing meaning. The roles of words in a sentence are indicated through suffixes rather than strict word order, similar to how many computer languages structure data and commands for clarity.

This flexibility in syntax contributes to Sanskrit's effectiveness in expressing complex ideas and making translations across diverse contexts. Unlike some languages that rely on rigid structure, Sanskrit's use of inflection makes it both structured and adaptable, providing clarity in scientific, philosophical, and poetic texts alike.

5. Artificial Intelligence and Computational Linguistics

The structure of Sanskrit grammar has intrigued computer scientists exploring the possibility of using it for artificial intelligence. Due to its algorithmic clarity and rule-based structure, Sanskrit is considered a potential model for programming languages that aim to understand natural language. Computational linguists have been researching how Panini's rules could be implemented in AI systems for accurate language processing and machine translation.

Moreover, Sanskrit's use of Sandhi rules—rules for combining words without changing their phonetic structure—presents an intriguing model for processing spoken and written language. These rules could be leveraged in natural language processing to improve voice recognition and translation systems.

6. Mathematical and Logical Rigor

In addition to its grammatical precision, Sanskrit's inherent logic aligns well with mathematical principles. Ancient Sanskrit scholars often encoded mathematical and astronomical data in verses, demonstrating a unique interplay between language and mathematics. For example:

- **Pi (π) Calculations**: The famous *Shloka* (verse) from Aryabhata's *Aryabhatiya* encoded the approximate value of π. The verse is as given below

  (*विबुधनेत्रगजाहिहुताशनत्रिगुणवेदाभवारणबाहवः*

  नवनिखर्वमितेवृतिविस्तरे परिधिमानमिदं जगदुर्बुधः) (Note: more will be discussed in future articles)

- **Logical Consistency**: Sanskrit texts often follow strict logical structures, especially in philosophical texts where arguments are laid out in syllogistic forms.

This logical rigor has drawn comparisons to formal systems in mathematics and is part of what makes Sanskrit texts accessible for scientific exploration and analysis.

Conclusion

The scientific aspects of the Sanskrit language highlight its unique structure, phonetics, and logical clarity, which are advanced even by contemporary standards. Its influence on linguistics, cognitive science, and computational theory continues to inspire researchers and academics. As more discoveries unfold, Sanskrit's role as not just a classical language but a scientifically structured medium of communication becomes increasingly evident. Its continued study may well reveal even more sophisticated facets of its design, contributing to modern science and linguistics.

DECODING GENERATIVE AI: THE DEVELOPMENT, IMPACT, AND FUTURE OF LARGE LANGUAGE MODELS

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Abstract

This article presents a detailed review of Generative AI, focusing on the growth and use of large language models (LLMs) like the GPT series. It follows the journey of LLMs from their beginning to their current role as a powerful tool across various fields, including education, industry, and society. Through analysis, the article shows how LLMs are changing these areas by advancing tasks like automated content creation, communication between people and computers, and finding new knowledge. Along with these benefits, the article also discusses the ethical issues that come with the broad use of LLMs, such as concerns about data privacy, fairness, and the environmental impact of training and using these models. By acknowledging these challenges, the article aims to encourage a balanced understanding of the role of LLMs in modern technology. It concludes with an optimistic view of the future.

Identify new and promising research directions this includes efforts to tailor the LLM to support vernacular languages. Expand access and relevance to diverse language communities Another prominent research avenue is the application of LLM in the interpretation of ancient texts. This opens up interesting opportunities for historical and cultural preservation. These emerging fields highlight the broad potential of LLM, suggesting that its future applications could lead to profound changes in AI technology and not only its societal impact.

I. Introduction

Generative AI, particularly through Large Language Models (LLMs), has transformed the field of artificial intelligence and expanded the possibilities of automated language understanding, data processing, and synthesis. This article provides a thorough analysis of the journey of LLMs, exploring their underlying design, technical advancements, and broad impacts across various fields. It also covers future research opportunities and addresses critical ethical considerations. This article presents an in-depth view of the rapid evolution of LLMs, their current applications, and the challenges and opportunities they bring. The aim is to provide a balanced understanding of LLMs, recognizing both their transformative potential and the considerations required for their responsible use and future development. The article is organized as follows: (1) Background on Generative AI and LLMs, (2) Evolution of the GPT series, (3) Core Architecture and Technology, (4) Applications, (5) Ethical Challenges, and (6) Future Research Directions.

II. Background of Generative AI and LLMs

A. Historical Context and Milestones

The roots of Generative AI trace back to foundational concepts in AI, such as the Turing Test and Perceptron models, which laid the groundwork for deep learning and natural language processing (NLP) advancements [1].

B. Early NLP Models

Key models like n-grams, Word2Vec, and BERT introduced contextual embeddings and made pre-training possible, setting the stage for the creation of sophisticated, large-scale language models [2].

C. Defining Generative AI and LLMs

Generative AI refers to AI systems capable of generating new data, while LLMs specialize in handling complex language tasks with their robust data processing and architectural capacity.

III. The Evolution of the GPT Series

A. GPT-1 to GPT-3

The development of the GPT series represents a pivotal progression in LLMs:

- **GPT-1**: This model showcased unsupervised pre-training for NLP tasks using a large-scale language model [3].
- **GPT-2**: Expanded on GPT-1 by increasing parameter count to 1.5 billion, greatly enhancing generative capabilities and sparking discourse on AI safety [4].
- **GPT-3**: Enabled few-shot learning with 175 billion parameters, representing a landmark in model generalization and versatility [5].

B. GPT-4 and Recent Advances

GPT-4 introduced new capabilities, including handling multi-modal tasks and improved alignment with human values, further advancing the potential of Generative AI [6].

IV. Core Architecture and Technology in LLMs

A. The Transformer Architecture

The self-attention mechanism in the Transformer model enables efficient parallelization and scalability, essential for LLMs to manage complex language tasks [7].

B. Pre-Training and Fine-Tuning Techniques

LLMs are typically trained in two stages: pre-training on vast datasets for foundational understanding and fine-tuning for task-specific optimization.

C. Scaling Laws and Computational Demands

The scaling laws governing LLMs show that as model complexity increases, so do computational resource requirements, necessitating careful optimization [8].

V. Applications and Use Cases

A. Industry Applications

Generative AI models like GPT support a range of applications across industries:

- **Healthcare**: Automated diagnostics, data summarization, and personalized treatments [9].
- **Finance**: Use in fraud detection, sentiment analysis, and report automation [10].
- **Creative Industries**: Content generation, translation, and interactive virtual assistants.

B. Academic and Research Applications

In academic settings, LLMs enhance research synthesis, automated coding, and educational tools by generating prompts, explanations, and study material [11].

VI. Ethical Challenges and Considerations

A. Bias and Fairness in LLMs

LLMs may reflect inherent biases in their training data, including racial, gender, and socio-economic biases, potentially impacting their output [12].

B. Privacy and Data Security

Models handling sensitive data must address data privacy concerns, especially in customer service and personal applications [13].

C. Transparency and Interpretability

High-stakes applications demand transparent and explainable AI, enabling users to understand model-driven decisions.

D. Environmental Impact

The computational power needed to train LLMs has an ecological footprint, raising concerns about sustainability in AI [14].

VII. Future Research Directions

A. Multimodal LLMs and Continual Learning

Future LLMs are expected to process diverse data types (text, image, audio) and adapt over time without extensive retraining, enhancing their application in media and accessibility [15].

B. Customizing LLMs for Vernacular Language Support

Most LLMs currently prioritize widely spoken languages due to data limitations. Researchers are developing LLMs for vernacular languages using transfer learning and fine-tuning on vernacular datasets. This adaptation could significantly improve accessibility and usability in underrepresented linguistic communities [16] [17].

C. Using LLMs to Explore Ancient and Historical Documents

Ancient documents, often written in languages and scripts no longer in common use, present unique challenges for NLP. Future research aims to train LLMs on historical corpora for more accurate translations and interpretation of ancient texts, potentially unlocking historical insights in previously untranslated works [18] [19]

VIII. Conclusion

In conclusion, this article has examined the journey of Generative AI and Large Language Models (LLMs), tracking their significant milestones and the ethical challenges that come with their use. We discussed how LLMs, with their ability to process and generate human-like text, have reshaped fields from education to industry, showing both their potential and the complexities involved. Looking ahead, we highlighted several promising research areas. These include enhancing LLMs to support more vernacular languages, making these tools accessible to a broader range of speakers worldwide, and applying LLMs to interpret ancient texts, helping preserve and share valuable aspects of cultural heritage. As LLMs continue to evolve, a focus on responsible and ethical standards is essential to ensure that Generative AI benefits global communities, promotes linguistic diversity, and preserves cultural heritage.

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Sharing Secrets: The Quantum Magic

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It was pleasant and relaxing Sunday evening. Whole family was enjoying the movie "Toy Story' along with snacks. We all are fond of Disney/Pixar movies for their animation and storytelling."Toy Story" is a story of toys and their owner Andy. Toys those are main characters in the movie remain ordinary in presence of Andy but when the owner is not observing them, they become live and behave differently.

"Papa, how is this possible that toys become aware of the presence of Andy?", My son who is tenth board aspirant, shaking his face in disagreement asked.

My daughter who is final year student of Computer Engineering also joined and said"Yes papa, this is not settling well in mind. This is illogical and not expected from Disney… "

I smiled and said, "It may be possible that writers of the movie know Quantum Mechanics….!!"

"Means what? Explain", they asked with curiosity.

Lady of the house came with a tray of popcorn and joined the discussion. All are looking at me in anticipation.

I took a pause for while and went down to the memory lane of my early days of research when I started my research in Quantum Cryptography. My research area is Quantum Key Distribution and while getting familiar with the fundamentals of the quantum mechanics, I also had same expressions of disbelief like my both children.

My family as being aware of my research area was looking at me for the explanation. I said, "Qubits behave in a same way as the toys of this movie. When nobody is observing they are in super position and when someone tries to measure them, they collapse to one of the state."

My son jolted his face and said, "Papa, explain in detail…What is this qubit and super position?"

I started replying in detail, "Photons are energy particles of light and qubit is a bit value assigned to photon as per polarization. Quantum particle have electromagnetic field and the direction of electromagnetic field is known as polarization"

"Now what do you mean by polarization?", Lady of the house interrupted.

"Darling, just last week we have purchased Polaroid sunglasses for you. So the function of Polaroid sunglass is that they allow light rays coming from certain angle or direction and at the same time they cut down the light rays coming from certain angle or direction which are considered harmful to eyes."

"Okay…..", said the lady of the house.

"Qubit always remain in superposition of two states like 0 and 1 until someone measures it. When someone tries to measure it, it takes any one definite value 0 or 1. Just like our toys in movie." I continued to explain.

Both the children felt very intriguing with the concepts of Quantum mechanics. Daughter said,"Papa, your research area is Quantum Key Distribution. We want to dive deep in that also. It seems very interesting."

I continued to simplify the concepts, "For example, two parties Alice and Bob want to communicate secretly. What should they do?"

Being final year Computer Engineering student, daughter replied instantly, "They need to encrypt and decrypt messages so others cannot get any information from those messages."

"Exactly", I said.

Looking at the bizarre faces of son and the lady of the house, I continued," Encryption means to seal the message in envelope and lock the envelope with the key. The locked envelope can be moved publically. Decryption means to open the envelope to read the message with the key. Only a person who has a key can open the envelope and can read the message. So for secret communication, we need to distribute the key secretly between two parties before starting of the communication. And that is the main task and the topic of my research, Quantum key distribution."

"How it works?", asked the curious son.

"Let us have tea and bhujiya first to arouse your minds for digesting such mind blowing concepts", Lady of the house ordered. We left with no option with us then to obey the ruler.

Just after finishing the high tea I continued," Alice and Bob want to communicate quantum key. Both share the public quantum channel and authenticated classical channel. Both possess photon detectors. Alice and Bob want to communicate string of qubits which consists 0s and 1s. To encode these qubits, Alice uses two types of filters randomly, Horizontal/ Vertical(H/V) filter and Diagonal filter. H/V filter allows 00 and 900 polarizations while diagonal filter allows 450 and 1350 polarizations. Applying filter on qubits (which are basically a presentation of photon polarization to 0s and 1s) change the state of qubits and hence they are encoded. Alice sends these encoded qubits to Bob on public quantum channel. Bob uses the same two filters randomly to decode the qubits. Alice and Bob don't know that which filters are used by their partner. Alice and Bob announce the filters used by them for each qubit on public channel. Only for those cases when they have used same filters, they have same value of qubits which assembles quantum key. Other qubits are discarded as they are measured with different filters. So there is fifty percent probability that Alice and Bob have used same filters and have same values of qubits. This reduced key is known as sifted key." (See Table:1)

"Papa, you said that Alice and Bob using public quantum channel to transfer qubits. So what if anyone tries to steal the information?", daughter argued with a point.

"Good question", teacher within me replied instantly.

I continued to elaborate further," Here the quantum weirdness comes into the picture. Let us assume that eavesdropper Eve is interested in intercepting the messages. For the same she needs to measure the qubits send by Alice. But as per Heisenberg's uncertainty principle, one cannot measure the two properties of

particle simultaneously with accuracy. So the value and state(polarization) of the qubit cannot be measured with utmost precision simultaneously."

"Eve cannot restrain her from hating Heisenberg", a wisecrack came from daughter.

"What if Eve stores the qubits and then measure both properties later one by one?", Asked the ignited son.

"Well, quantum weirdness helps here too, my dear son." I continued…"As per No Cloning theorem, qubit cannot be copied or changed without disturbing its original state. And this makes it impossible for Eve to intercept the quantum information."

"Wow, this makes quantum key distribution totally different game compared to classical key distribution. In classical key distribution we can copy and measure as we wish and hence can intercept the message but this is not possible with quantum key distribution", murmured daughter.

"Yes, weirdness of quantum mechanics appeared as blessings while deriving applications." I said.

Lady of the house stopped our intense discussion by asking, "What happened then with our derived sifted key?"

I replied, "I am coming on that. Sifted key is then checked for the presence of Eavesdropper or error. If Eve had tried to measure the bits, unknowingly she had disturbed the bits. And if noise is present over the channel, in that case also bits are changed. So Alice and Bob check for the tolerable rate of error. If bits mismatch is higher than threshold (predefined tolerable rate of error), the whole procedure would be discarded and initiated all over again."

Looking at the astonished faces of all, I said, "Hope I have made it clear."

There was a silence for a while as everyone is establishing their understanding of the discussion. Son asked breaking the silence," Papa, say some latest development in quantum mechanics or computing?

I said," Many….like Quantum teleportation, Super dense coding, Quantum annealing, Quantum machine learning, Quantum Chemistry and many more….."

Excited son asked," Can quantum mechanics achieve time travel?"

I just smiled and said, "Dear, we are only finite by our imagination. Anything is possible in this microscopic world of particles. You should ask to the undisputed king of this world, Marvel's Ant-man."

Table:1 QKD protocol procedure with sample values

+ - H/V Filter (0^0 and 90^0)					X – Diagonal Filter (45^0 and 135^0)				
Alice's bits	0	1	0	1	0	1	1	1	1
Alice's basis	+	X	+	X	+	X	X	X	+
Alice's polarization	↑	↕	→	↕	↑	↕	↕	↕	→
Bob's basis	+	+	X	X	X	+	X	X	+
Bob's polarization	↑	→	↕	↕	↕	→	↕	↕	→
Public discussion of measurements and filters used									
Shared secret key	0			1			1	1	1

GMCA GTU TOP TEN RANKS

Sem	2018-19 ODD TERM WINTER 18		STUDENT RANK
1	185690693017	KACHCHHI SAKINA	1
	185690693029	PANDYA PRACHI SANJAYKUMAR	5
	185690693049	SHARMA DEEPIKA SURESHKUMAR	6
	185690693038	PATEL REENAL BABULAL	8
	185690693009	GOHIL BHAVESHKUMAR SURESHBHAI	9
	185690693018	KATARIYA RINKAL PRAVINBHAI	10
	2018-19 EVEN TERM SUMMER 19		
2	185690693029	PANDYA PRACHI SANJAYKUMAR	3
	185690693017	KACHCHHI SAKINA	1
	185690693018	KATARIYA RINKAL PRAVINBHAI	5
	185690693049	SHARMA DEEPIKA SURESHKUMAR	6
	185690693009	GOHIL BHAVESHKUMAR SURESHBHAI	10
	2019-20 ODD TERM WINTER 19		
1	195690693009	BHADANI ARATI BIPINBHAI	2
	195690693035	KORADIYA JANAKKUMAR BHIMJIBHAI	3
	195690693054	PRAJAPATI HARDIK NALINBHAI	5
	195690693071	SHUDRA BHAVIK JAYNTILAL	6
	195690693019	GOUR JAGRUTI RAJESHCHANDRA	8
	195690693014	PATEL DISHANG HITENDRABHAI	10
	2019-20 EVEN TERM SUMMER 20		
2	195690693009	BHADANI ARATI BIPINBHAI	2
	195690693072	JANI SRUSHTI	4
	195690693035	KORADIYA JANAKKUMAR BHIMJIBHAI	6
	195690693014	PATEL DISHANG HITENDRABHAI	7
	195690693055	PRAJAPATI JEELBEN MAHENDRAKUMAR	9
	2020-21 ODD TERM WINTER 20		
3	195690693014	PATEL DISHANG HITENDRABHAI	3
	195690693009	BHADANI ARATI BIPINBHAI	6
	195690693035	KORADIYA JANAKKUMAR BHIMJIBHAI	7
	195690693072	JANI SRUSHTI	9
	195690693052	PATEL ANJALI RAGHAVBHAI	10
	2020-21 EVEN TERM SUMMER 21		
4	195690693014	PATEL DISHANG HITENDRABHAI	1
	195690693009	BHADANI ARATI BIPINBHAI	8
	195690693052	PATEL ANJALI RAGHAVBHAI	9
	195690693010	BHADIYADRA PARTHKUMAR LALITBHAI	10

	2020-21 ODD TERM		
	WINTER 21		
5	195690693014	PATEL DISHANG HITENDRABHAI	2
	195690693010	BHADIYADRA PARTHKUMAR LALITBHAI	8
	2021-22 EVEN TERM		
	SUMMER 22		
6	195690693014	PATEL DISHANG HITENDRABHAI	4
	195690693035	KORADIYA JANAKKUMAR BHIMJIBHAI	9
	2022-23 ODD TERM		
	WINTER 22		
1	225690694029	KHAMAR RIYA YAGNESHBHAI	6
	2022-23 EVEN TERM		
	SUMMER 23		
2	225690694029	KHAMAR RIYA YAGNESHBHAI	10
6	185690693036	PATEL MONIKABEN KANAKBHAI	3

PLACEMENT @ GMCA

- **Placement Statistics:**

Year	No of Companies Visited	Students Placed	Maximum Package	Minimum Package
2022	15	45	4.22 Lac	1.8 Lac
2023	13	48	5.1 Lac	2.1 Lac
2024	9	47	5.3 Lac	2.4 Lac

- **List of Companies:**
  - Arastu Systems Pvt Ltd
  - Ordex Technology Solutions Pvt Ltd
  - HK Automation Pvt Ltd
  - IT Path Solutions Pvt Ltd
  - Codevision Technologies Pvt Ltd
  - Gateway Group of Companies
  - Tatvasoft
  - TechAbbot Technology Services Pvt. Ltd
  - LANET Software Solutions Pvt Ltd
  - Innvonix Technology Solutions Pvt Ltd
  - Web Optimizations Software Solutions Pvt Ltd

MoU @ GMCA

- **Institute has MoUs with following Companies:**
  - Harikrupa Automation Pvt Ltd
  - JBYTE Infotech LLP
  - TOPS Technologies Pvt Ltd
  - Acute Informatics Pvt Ltd
  - Amee Power Drives

INDUSTRIAL VISITS @ GMCA

• Science City, Ahmedabad

The two day Conclave was organised at Science City, Ahmedabad on 10-11 September 2022. The first of its kind Conclave witnessed the participation of Gujarat CM, Union MoS Science & Technology (S&T), S&T Ministers and Secretaries of States & Union Territories, industry leaders, entrepreneurs, NGOs, and many government organizations like ISRO, BARC, BEL, PRL etc.

• Industrial visit to E-infochips Ahmedabad

With the objective of enriching the knowledge and exposure of the students to recent trends in AI, IoT device and applications of computer science in automation, an industrial visit to eInfochips Ahmedabad has been organized by Government MCA college, on 10th October 2022.

• Visit to Entrepreneurship Development Institute of India (EDII)

Government MCA College, Maninagar(EAST) has organized industrial visit to Entrepreneurship Development Institute Of India, Bhat, Gandhinagar (India) on 26th April, 2023.47 students of Government MCA College took part in the industrial Visit. At EDII, Dr Pankaj Bharti and Dr SatyaRanjanAcharaya delivered expert talks on various aspects regarding start up and entrepreneurship.

• National Forensic Sciences University

Government MCA College, Maninagar (East) had organized an industrial visit on 28 April , 2023 to National Forensic Sciences University. All the students and faculty members visited centre of excellence for research & analysis of narcotic drug & psychotropic substances, Centre of excellence in investigative and forensic psychology having different cases of criminal psychology and respective investigation techniques using computerised system and centre of cyber security cell having air cooling system of metro station and dashboard of system monitoring cell.

• Visit to Institute for Plasma Research (IPR)

Government MCA College, Maninagar(EAST) has organized industrial visit to Institute for Plasma Research (IPR), Bhat, Gandhinagar (India) on 25th May, 2023. At IPR, Mr Hemant Joshi and Mr Gattu Ramesh Babu delivered expert talks on various aspects regarding data centre and various research activities undertaken at IPR.

• Visit to Rashtriya Raksha University

Government MCA College, Maninagar (EAST) had organized an industrial visit on 24 April 2024to RashtriyaRaksha University, Dehegam, Gandhinagar (India). RRU has Accounting Forensics Course for protection and secure the financial aspects of thecompany there expert told us about the course and its benefits he also shown and forensicexample of bank cheque which was modified but it was not seen by normal eyes he hasmachine with many features he shown us the amount of the cheque was altered.



• Visit to Entrepreneurship Development Institute of India (EDII)

Government MCA College, Maninagar (East) had organized an industrial visit on 07 March, 2024 to Entrepreneurship Development Institute of India (EDII). In this visit, students got glimpse of different schemes of Government of Gujarat and Government of India for entrepreneurship development and Associate Professor EDII discussed about link between entrepreneurship, innovation &start ups, government institutes for various support and other support networks.

• Visit to ISRO (SAC), Ahmedabad

On the 11th of May, 2024, our college had the unique opportunity to visit the Space Applications Centre (SAC), ISRO, Ahmedabad, Gujarat. This visit was organized to celebrate National Technology Day, with the theme "From Schools to Startups: Igniting Young Minds to Innovate". The event aimed to inspire young students and emerging entrepreneurs byshowcasing India's technological advancements and fostering a spirit of innovation.

GMCA Annual Sports Events

Event Coordinator: ***Prof. Parth A. Goswami***

About the Sports-Event-at GMCA:

Academics and learning are related to the ability of the brain to capture, store and process information. Sports impacts on education are limitless. Students are encouraged to participate in sports while in school and in college. Playing a sport is a great way for students to take a break from their regular academics and release pent-up energy and get themselves de-stressed. It also helps them lead fuller and happier lives as sports and fitness activities have proven to provide not only physical benefits but also social and psychological benefits to students.

To keep GMCA students energized and charged up for upcoming academics and other academic activities, sports events are organized every year.

Sports-fest-Event details:

Date: (1) 16-06-2022 to 18-06-2022 (2) 17-04-2023 to 21-04-2023 (3) 30-09-2024 to 05-10-2024

Location: Government MCA College

Games: (1) Cricket (2) Volleyball (3) Chess (4) Kho-Kho (5) Table-tennis (6) Badminton (7) Dumb Charades (8) Tug of war (9) Carrom (10) 3-leg run (11) Fire in the Mountain (12) Antakshari (13) Garba day

Match Referees: (1) Prof. Bhavesh Prajapati (2) Prof. Nirali Sheth (3) Prof. Darshan Modi (4) Prof. Nisha Chavda (5) Prof. Jaimin Dave

Photographs Sports Fest -2022:






Photographs Sports Fest-2023:





Photographs Sports Fest-2024:


GMCA Garba Day

Year 2023

Year 2024

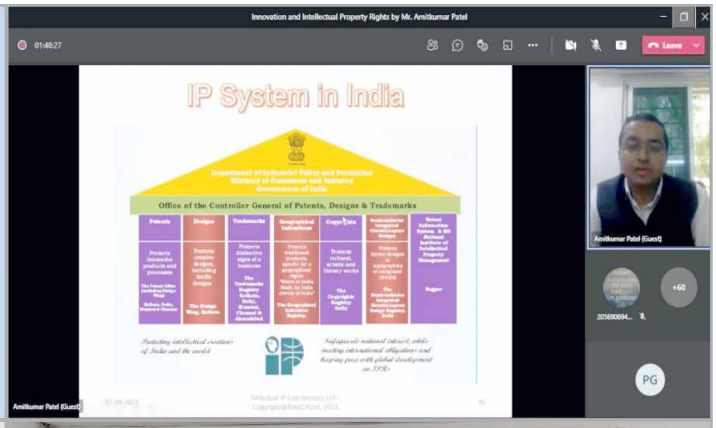
Entrepreneurship and SSIP Cell

With the motive to make Government M.C.A. college students sensitized, aware and enhance their knowledge about "**Entrepreneurship and Innovation"** a Student Start-up and Innovation - SSIP cell is formed at institute level. It was established in 2021. Main objective of this cell is to bring out an entrepreneurial spirit out of those students who wants to start their own venture.

Many times young students have ideas that can solve real life problems faced by industry/society, but due to lack of awareness and financial support these ideas are shelved. Institute received Rs. 2,50,000 in 2021-22 and Rs. 2,00,000 in 2022-23 from Gujarat Knowledge Society (GKS) to utilize this fund for SSIP-Startup and Entrepreneurship related activities. This cell conducts various activities to make students aware about start-ups, to provide financial support for start-up and prototyping, and to provide other infrastructural facilities under Student Start-up and Innovation Policy (SSIP) implemented by Government of Gujarat.

An innovative idea contest viz., "**IDEATHON"** is organized every year to enable students to showcase their innovative business ideas. Winners in this competition are given prizes to uplift their entrepreneurial enthusiasm.

Under SOIC (Student Open Innovation Challenge), 2019 student team of GMCA with project Gujarat Guide wins 75000 Rs. grant under the guidance of Prof. Bhavesh Prajapati.



WINNERS of Logo Design Competition for GMCA Newsletter

Winner 1

Akshan Pandey 23GMCA12

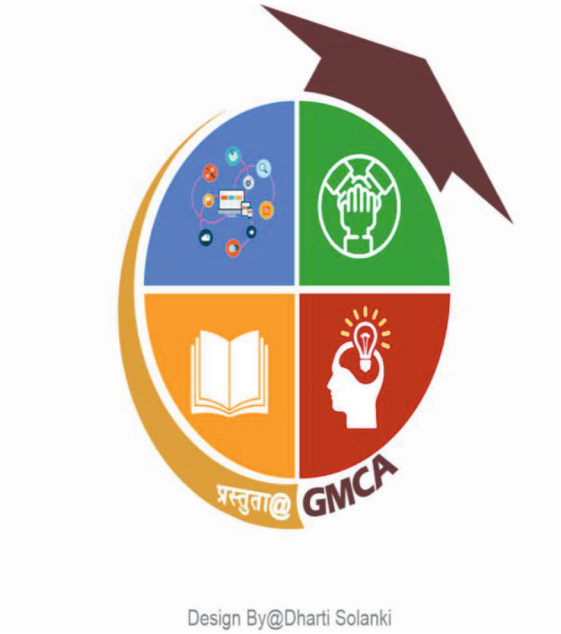
logo description :-
(a) Both hands describe indian flag .
(b) leaf on both the sides shows save nature.
(c) In the center there is a symbol of newsletter & blue curve shows sky is the limit to get success in life.

Winner 2

Kashish Bhanushali

I have chosen this background because it is simple yet elegant. Font of this logo is simple and is easy to read. Design of this logo suggests that the letter is spreading or giving information about activities performed in GMCA.

Winner 3



Dharti Solanki

LOGO DESIGN DISCRIPTION :
CHOOSE SYMBOL FOR 4 PRINCIPAL OR SKILL FOR MCA STUDENT, SOFTWARE DEVLOPER, COMPUTER APPLICATION KNOWLEDGE, UNITY OR COMMUNICATION, PROBLEM SOLVING.
COLORS : BLUE, GREEN, ORANGE, RED
- Blue colour means trust or loyalty and power.
- Green natural and renewal.
- orange color means vibrant, playful happy, artistic and energetic.
- red means passion, hunger and Exitment.

USING COLOR IS PRESENT COLLAGE ATMOSPHERE

Government MCA College
Maninagar (EAST), Ahmedabad

Dr. Bhavesh B. Prajapati
Head of the Department

Dr. Bhavesh B. Prajapati has received AWSAR (Augmenting Writing Skills for Articulating Research) award for research story "Sharing Secrets: The Quantum Magic" which is selected among best 100 stories by Department of Science and Technology, Government of India in 2020. (Received award on 28th February 2021.)

अवसर (शोध की अभिव्यक्ति के लिए लेखन कौशल), विज्ञान एवं प्रौद्योगिकी विभाग (डीएसटी), भारत सरकार की एक पहल है। इसका उद्देश्य भारत में विज्ञान, प्रौद्योगिकी और नवोन्मेष के क्षेत्र में पीएचडी शोध छात्रों और पोस्ट-डॉक्टोरल फेलो द्वारा वैज्ञानिक शोधों की जानकारी का प्रसार लोकप्रिय विज्ञान लेखन प्रारूप में किया जाना है।

AWSAR (Augmenting Writing Skills for Articulating Research) is an initiative of Department of Science and Technology (DST), Government of India. It attempts to disseminate Indian research in Science, Technology & Innovation being pursued by Ph.D. Scholars and Post Doctoral Fellows (PDFs) in popular science writing format.

AWSAR

सत्यमेव जयते
भारत सरकार
GOVERNMENT OF INDIA
विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF SCIENCE AND TECHNOLOGY

अवसर पुरस्कार
(शोध की अभिव्यक्ति के लिए लेखन कौशल)

AWSAR AWARD
(Augmenting Writing Skills for Articulating Research)

भावेशकुमार बी. प्रजापति

को पीएचडी श्रेणी में लोकप्रिय विज्ञान लेखन के लिए प्रशंसा प्रमाण पत्र, राष्ट्रीय विज्ञान दिवस, 28 फरवरी, 2021, पर प्रदान किया जाता है।

This Certificate of Appreciation is Presented to

Bhaveshkumar B. Prajapati

for his Popular Science Story Selected under Ph.D. Category, on the National Science Day, 28th February, 2021.

प्रो. आशुतोष शर्मा Prof. Ashutosh Sharma
सचिव, भारत सरकार Secretary to the Government of India
विज्ञान एवं प्रौद्योगिकी विभाग Department of Science and Technology

सविप्रसंप NCSTC

VIGYAN PRASAR विज्ञान प्रसार

Government MCA College
Maninagar (EAST), Ahmedabad

Dr. Chetan B. Bhatt
Principal

Distinguish Automation Professional-2016 International Society of Automation (SIA) Div-14 (Asia–Pacific Region)

Excellence in Education – 2017
International Society of Automation

1. **Developing 'Intelligent Tutoring System for the course on Control System Design"**
2. **Developing curriculum based on framework developed by International Federation for Automation and Control at GTU and other various University**

GMCA Website:
https://gmca.ac.in/

Facebook Link:
https://www.facebook.com/people/Government-MCA-collegeManinagar/100064855353738/

Youtube Link:
https://www.youtube.com/channel/UCqELfLg-8aKMD6-L9MUWDMw/featured