GOVERNMENT POLYTECHNIC,
AHMEDABAD
PROGRAMME : COMPUTER ENGINEERING

संवाद

First Edition

2019

OUR VISION

Envision to provide best services to stakeholders by achieving academic and professional excellence as per the needs of industry and community globally.

OUR MISSION

- ✓ To incorporate fundamentals of computer and related engineering fields.
- ✓ To motivate the culture of learning among student and faculty members to enhance domain related competency.
- ✓ To develop professional and social attitudes and values in learners.

OUR FACULTY

Mr. Hasmukh Baldaniya
Experience: 25 years
Qualification: ME
HEAD OF THE DEPARTMENT

Mr. Jigar Acharya
Experience: 14 years
Qualification: ME
LECTURER

Mrs. Bhoomika Sharma
Experience: 12 years
Qualification: ME
LECTURER

Mrs. Kinjalkumari Patel
Experience: 17 years
Qualification: ME
LECTURER

Mrs. Mitaben Bhadarka
Experience: 8 years
Qualification: ME
LECTURER

Mr. Vinaykumar Soni
Experience: 3 years
Qualification: ME
LECTURER

Mr. Mihir Mehta
Experience: 3 years
Qualification: ME
LECTURER

Mr. Chintankumar Bhavsar
Experience: 13 years
Qualification: ME
LECTURER

Mr. Alpeshkumar Thaker
Experience: 3 years
Qualification: BE
LECTURER

Mr. Umang Shah
Experience: 5.5 years
Qualification: MTECH
LECTURER

Mr. Yagnik Tank

Experience: 3 years

Qualification: BE

LECTURER

Mr. Rahul Vaza

Experience: 5.5 years

Qualification: ME

LECTURER

Mr. Rajesh Jambukiya

Experience: 3 years

Qualification: BE

LECTURER

Mrs. Khyati Goswami

Experience: 6 years

Qualification: BE

LECTURER

Miss. Dharaben Kanzariya

Experience: 9 years

Qualification: BE

LECTURER

Mrs. Charlulata Leuva

Experience: 11 years

Qualification: BE

LECTURER

Mrs. Gayatri Bharvad

Experience: 7 years

Qualification: BE

LECTURER

Mrs. Vaidehi Shah

Experience: 7 years

Qualification: BE

LECTURER

Mr. Ranjit Charoliya

Experience: 5 years

Qualification: DIPLOMA

LAB ASSISTANT

FACULTY EDITORS

Mrs. BHOOMIKA SHARMA

Mr. VINAY SONI

Mr. MIHIR MEHTA

Mr. CHINTAN BHAVSAR

STUDENT EDITORS

Shah Shalin
Semester: 6th

Rajput Abhishek
Semester: 6th

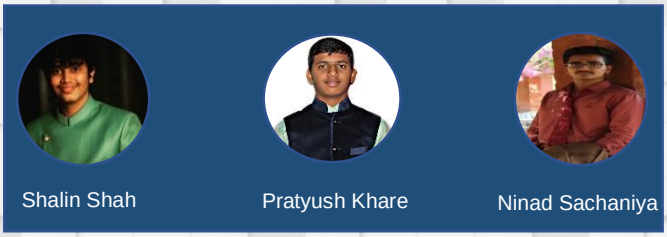
Shah Shreyal
Semester: 6th

Departmental Toppers

Summer 2019 (6th Semester)

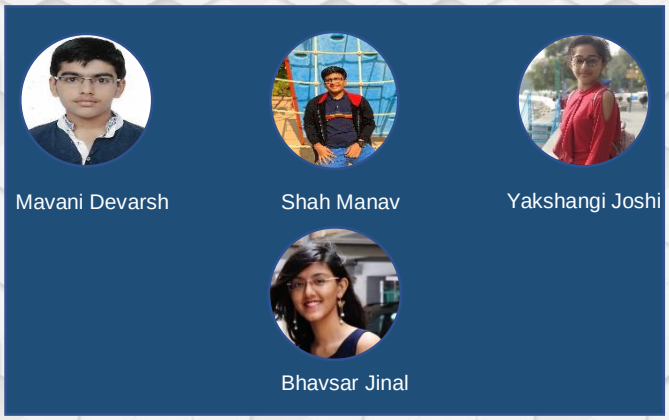
Student having 10 SPI

Summer 2019 (4th Semester)



21 students have secured more than 9 SPI

Summer 2019 (2nd Semester)



25 students have se cured more than 9 SPI

WHAT'S INSIDE

ABOUT COLLEGE

Government Polytechnic - Ahmedabad is one of the Pioneer Institute in Diploma Technical Education side since 1954. Institute is running various 10 different diploma courses under CTE and affiliated with Gujarat Technological University. Government Polytechnic Ahmedabad was established with the single-minded objective of providing professional education to the students & to make them responsible citizen who can contribute towards the society morally & socially. We are committed to training our students to gain skills & knowledge, self-confident & positive thinking so that they can compete in the competitive world of today & tomorrow.

ABOUT COMPUTER DEPARTMENT

Government Polytechnic, Ahmedabad offers ten diploma courses in various branches. Diploma in Computer Engineering is one of the courses offered by Government Polytechnic, Ahmedabad since 1989 with intake of 60. In this era, Computer Engineering is fastest developing discipline in the world. Computer Engineering integrates several fields of electronics communication engineering, electrical engineering and computer science required to develop computer hardware and software. Computer engineering branch has opened a door of automation in various fields to serve the society for better purposes. So, by the time gradually our intake is increased from 60 to 120 in the year 2008 and as of now we have total 188 intake in computer engineering course. Our department is leading by Prof. H.J. Baldaniya (M.E in Electronics and Communication). He is working in technical education department as academician since 1995. Our department has 6 classrooms and 9 laboratories. Two classrooms have multi-media facility.

PROGRAM OUTCOMES

1. **Basic and Discipline specific knowledge:** Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.
2. **Problem analysis:** Identify and analyse well-defined engineering problems using codified standard methods.
3. **Design/ development of solutions:** Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
4. **Engineering Tools, Experimentation and Testing:** Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.
5. **Engineering practices for society, sustainability and environment:** Apply appropriate technology in context of society, sustainability, environment and ethical practices.
6. **Project Management:** Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
7. **Life-long learning:** Ability to analyses individual needs and engage in updating in the context of technological changes.

PROGRAM EDUCATIONAL OBJECTIVES

- Program will mold competent computer diploma holders and motive them for higher study to continue their career advancement.
- Program will prepare computer Professional for web designing, database administrator, system analyst, hardware and network maintenance engineers software testing and coding on various languages platforms.
- Program will prepare learners who understand their personal, professional, social responsibilities.

PROGRAM SPECIFIC OUTCOME

- Develop software solutions using open source and commercial software.
- Identify well defined computer hardware & networking problems.

HAPPENING

ORIENTATION

1st AUGUST 2019

HOD Message: - I welcome all the students & their parents to the department of computer engineering. We are committed to providing not only technical education to our students but also leadership qualities through which they can create opportunity of employment to others. Computer department focuses on holistic development of the students by a mixture of both curricular and extra-curricular activities. We believe that to develop a young mind we need to go beyond traditional classroom teaching, we realize that, and we organize industrial visit, industry expert sessions frequently to prepare our students industry ready

In computer engineering, you will study and apply your knowledge in understanding what computers are, as the way to program them, tools to write a program, interface between the computer and user, computer networking, managing the software database, software engineering and many more.

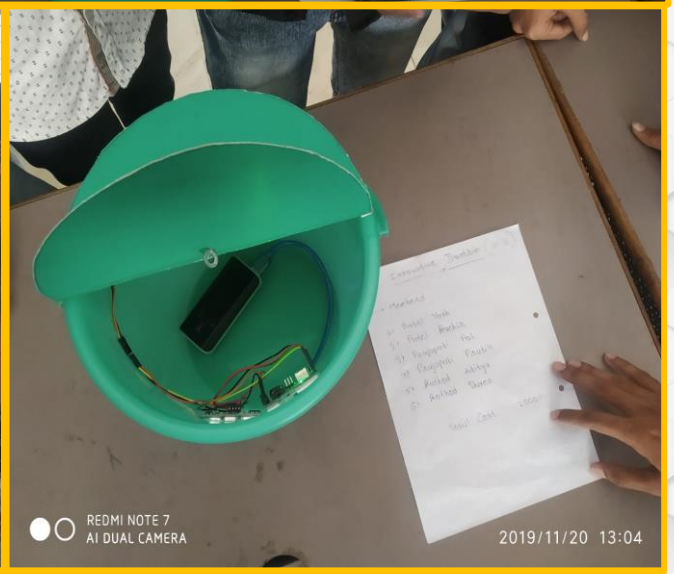
The department has a team of highly experienced and motivated faculty members who are in the process of tuning the young minds to make them globally competitive.

I wish all the students and faculty a great academic career.


GOVERNMENT P
AHMEDA

CONSTITUTION DAY CELEBRATION

PROJECT EXHIBITION EVENT



Days Celebration

Teacher's Day Celebration

5th September

5th September of every is celebrated as Teacher's day since 1962, which is birthday of Dr Sarvepalli Radhakrishna a great teacher and a staunch believer of education, known for his contribution towards the education system of India.

Parent Teacher's Meeting

A successful meeting was also held between parents of final year student and Department Faculties to instruct parents what to do after Diploma

Expert Talk

Expert talks were also organized where different experts came to introduce new techology.

Industrial Visit

Yoga Day Celebration

UPCOMING EVENTS

- ✓Academic Tour - January 2020
- ✓Republic Day Celebration - January 2020
- ✓Days Celebration - January 2020
- ✓Sports Festival - February 2020
- ✓Cultural Festival - March 2020
- ✓Industrial Visit - March 2020
- ✓Expert Talk - Throughout Academic Calendar
- ✓Technical Event - February 2020

ARTICLES

Blockchain

Shalin Shah, 5th Semester, Div. B

What is Blockchain?

Blockchain is one of the most popular and controversial topics of conversation among technology leaders in finance today.

First, Blockchain is a digital ledger of economic transactions that is fully public, continually updated by countless users, and considered by many impossible to corrupt. It is list of continuous records in blocks.

A blockchain database contains two types of records: transactions and blocks. Blocks hold batches of transactions. The blocks are time-stamped and link to a previous block. The transactions can't be altered retroactively.

How Blockchain Works?

When a block stores new data it is added to the blockchain. Blockchain, as its name suggests, consists of multiple blocks strung together.

1. A node starts a transaction by first creating and then digitally signing it with its private key (created via cryptography). A transaction can represent various actions in a blockchain. Most commonly this is a data structure that represents the transfer of value between users on the blockchain network. Transaction data structure usually consists of some logic of transfer of value, relevant rules, source and destination addresses, and other validation information.

2. A transaction is propagated (flooded) by using a flooding protocol, called Gossip protocol, to peers that validate the transaction based on preset criteria. Usually, more than one node is required to verify the transaction.

3. Once the transaction is validated, it is included in a block, which is then propagated onto the network. At this point, the transaction is considered confirmed.

4. The newly created block now becomes part of the ledger, and the next block links itself cryptographically back to this block. This link is a hash pointer. At this stage, the transaction gets its second confirmation and the block gets its first confirmation.

5. Transactions are then reconfirmed every time a new block is created. Usually, six confirmations in a network are required to consider the transaction final.

Transactions are then reconfirmed every time a new block is created. Usually, six confirmations in the Bitcoin network are required to consider the transaction final.

Software Defined Networking

Prayag Acharya, 5th Semester, Div. A

What is Software Defined Network

Software-defined networking (SDN) technology is an approach to network management that enables dynamic, programmatically efficient network configuration in order to improve network performance and monitoring making it more like cloud computing than traditional network management.

What is the concept of Software Defined Networking?

SDN architectures decouple network control and forwarding functions, enabling network control to become directly programmable and the underlying infrastructure to be abstracted from applications and network services.

The OpenFlow protocol can be used in SDN technologies. The SDN architecture is:

- **Directly programmable:** Network control is directly programmable because it is decoupled from forwarding functions.
- **Agile:** Abstracting control from forwarding lets administrators dynamically adjust network-wide traffic flow to meet changing needs.
- **Centrally managed:** Network intelligence is (logically) centralized in software based SDN controllers that maintain a global view of the network, which appears to applications and policy engines as a single, logical switch.
- **Programmatically configured:** SDN lets network managers configure, manage, secure, and optimize network resources very quickly via dynamic, automated SDN programs, which they can write themselves because the programs do not depend on proprietary software.
- **Open standards-based and vendor-neutral:** When implemented through open standards, SDN simplifies network design and operation because instructions are provided by SDN controllers instead of multiple, vendor-specific devices and protocols.

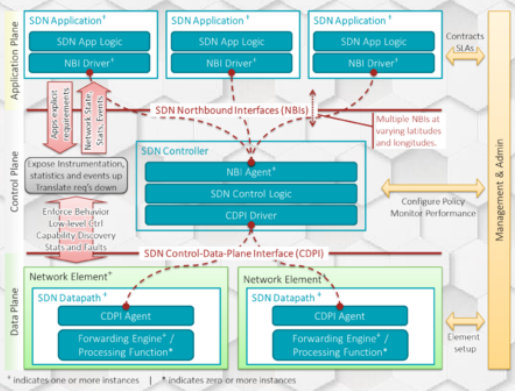
Architectural Component of Software Defined Networking:

- SDN Application

SDN Applications are programs that explicitly, directly, and programmatically communicate their network requirements and desired network behavior to the SDN Controller via a northbound interface (NBI). In addition, they may consume an abstracted view of the network for their internal decision-making purposes. An SDN Application consists of one SDN Application Logic and one or more NBI Drivers. SDN Applications may themselves expose another layer of abstracted network control, thus offering one or more higher-level NBIs through respective NBI agents.

- SDN Controller

The SDN Controller is a logically centralized entity in charge of (i) translating the requirements from the SDN Application layer down to the SDN Datapaths and (ii) providing the SDN Applications with an abstract view of the network (which may include statistics and events). An SDN Controller consists of one or more NBI Agents, the SDN Control Logic, and the Control to Data-Plane Interface (CDPI) driver. Definition as a logically centralized entity neither prescribes nor precludes implementation details such as the federation of multiple controllers, the hierarchical connection of controllers, communication interfaces between controllers, nor virtualization or slicing of network resources.



SDN Datapath

The SDN Datapath is a logical network device that exposes visibility and uncontested control over its advertised forwarding and data processing capabilities. The logical representation may en compass all or a subset of the physical substrate resources. An SDN Data path comprises a CDPI agent and a set of one or more traffic forwarding engines and zero or more traffic processing functions. These engines and functions may include simple forwarding between the datapath's external interfaces or internal traffic processing or termination functions. One or more SDN Datapaths may be contained in a single (physical) network element an integrated physical combination of communications res ources, managed as a unit. An SDN Datapath may also be defined across multiple physical network elements. This logical definition neither prescrib es nor precludes implementation details such as the logical to ph ysical mapping, management of shared physical resources, virtualization or slicing of the SDN Datapath, interoperability with non-SDN networking, nor the data processing function ality, which can include OSI layer 4-7 functions.

- SDN Control to Data-Plane Interface (CDPI)

  The SDN CDPI is the interface defined between an SDN Controller and a n SDN Datapath, which provide s at least (i) programmatic control of all forwarding operations, (ii) capabilities advertisement, (iii) statistics reporting, and (iv) event notification. One value of SDN lies in the expectation that the CDPI is implemented in an open, vendor-neutral and interoperable way.

- SDN Northbound Interfaces (NBI)

  SDN NBIs are interfaces between SDN Applications and SDN Controllers and typically provide abstract network views and enable direct expression of network behavior and requirements.

Quantum Cryptography

Ninad Sachaniya, 5th Semester, Div. A

"I think I can safely say that nobody understands quantum mechanics."

Richard Feynman, 1965

Quantum cryptography recently made headlines when European Union members announced their intention to invest $13 million in the research and development of a secure communications system based on this technology. The system, known as SECOQC (Secure Communication based on Quantum Cryptography), will serve as a strategic defense against the Echelon intelligence gathering system used by the United States, Australia, Britain, Canada and New Zealand. In addition, a handful of quantum information processing companies, including MagiQ Technologies and ID Quantique, are implementing quantum cryptography solutions to meet the needs of businesses, governments, and other institutions where preventing the unauthorized disclosure of information has become a critical success factor in maintaining a competitive advantage over adversaries. While the modern cryptosystems are said to be very effective in other words they are said to be "intractable"! then why a lot of money is been spent to develop a new cryptosystem – quantum cryptography?

Limitations of Modern cryptosystems

Since public key cryptography involves complex calculations that are relatively slow, they are employed to exchange keys rather than for the encryption of voluminous amounts of data. For example, widely deployed solutions, such as the RSA and the Diffie-Hellman key negotiation schemes, are typically used to distribute symmetric keys among remote parties. However, because asymmetric encryption is significantly slower than symmetric encryption, a hybrid approach is

preferred by many institutions to take advantage of the speed of a shared key system and the security of a public key system for the initial exchange of the symmetric key. Thus, this approach exploits the speed and performance of a symmetric key system while leveraging the scalability of a public key infrastructure. However, public key cryptosystems such as RSA and Diffie-Hellman are not based on concrete mathematical proofs. Rather, these algorithms are considered to be reasonably secure based on years of public scrutiny over the fundamental process of factoring large integers into their primes, which is said to be “intractable”. In other words, by the time the encryption algorithm could be defeated, the information being protected would have already lost all its value. Thus, the power of these algorithms is based on the fact that there is no known mathematical operation for quickly factoring very large numbers given today’s computer processing power. While current public key cryptosystems may be “good enough” to provide a reasonably strong level of confidentially today, there is exposure to a handful of risks. For instance, advancements in computer processing, such as quantum computing, may be able to defeat systems such as RSA in a timely fashion and therefore make public key cryptosystems obsolescent instantly. As another example, while the DES algorithm, which has a 56-bit key, was once considered to be secure, it is no longer thought of as such since advancements in technology have made it trivial to defeat. The fact that powerful computers may crack DES in a few hours served as a catalyst for the development of the replacement Advanced Encryption Standard. Hence, one area of risk is that public key cryptography may be vulnerable to the future technology developments in computer processing. Secondly, there is uncertainty whether a theorem may be developed in the future or perhaps already available that can factor large numbers into their primes in a timely manner. At present, there is no existing proof stating that it is impossible to develop such a factoring

theorem. As a result, public key systems are thus vulnerable to the uncertainty regarding the future creation of such a theorem, which would have a significant effect on the algorithm being mathematical intractable. This uncertainty provides potential risk to areas of national security and intellectual property which require perfect security. In sum, modern cryptography is vulnerable to both technological progress of computing power and evolution in mathematics to quickly reverse one-way functions such as that of factoring large integers. If a factoring theorem were publicized or computing became powerful enough to defeat public cryptography, then business, governments, militaries and other affected institutions would have to spend significant resources to research the risk of damage and potentially deploy a new and costly cryptography system quickly.

POEMS

Kuch Kar Tu (**कुछकरतु**)

हिंमतसे, हौंसलेसे
एकउम्मीदसे, कुछकरतु
मत डर तु मुश्किलों से
ए राही मत बैंठ तु
कुछ कर तु,कुछ कर तु।

आखिर क्या है मुश्किलें (2)
तेरी हिंमत जानने का जरिया है मुश्किलें
सफलता के किनारे तक पहुंचने का दरिया है मुश्किलें
परिश्रमकी नांव को सदा चलाये रख तु
ए राही मत बैंठ तु
कुछ कर तु,कुछ कर तु।

चुनौतियाँ तो है जीवन का एक हिस्सा
बन जाता जो सबके लिए एक प्रेरणा का किस्सा
जगा अपने अंदर इस का सामना करने की आग तु
कांटो भरे रास्ते को देख फूल सी सफलता मत त्याग तु
ए राही मत बैंठ तु
कुछ कर तु,कुछ कर तु।

बाँध ली जो मन में तूने सफलता पाने की गाँठ
नहीं मायने रखती तेरे लिए सुबह - शाम - दिन - रात

जिस दिन हो गई तेरी क्षमता से तेरी पहचान
नाकमियाबी तेरी होगी बस कुछ दिनों की मेहमान
सफलता के दिये में मेहनत का तेल डालतु
ए राही मत बैंठ तु
कुछ कर तु,कुछ कर तु।

~

मानवशाह, 3rd Semester

SKETCH

Art By:

Gohel Shrushti, 5th Semester, Div. A

Art by:

Happy Dadhaniya, 5th Semester, Div. A

Art by:

Rohan Panchasara, 3rd Semester, Div. A

Art By:

Soni Ritu, 4th Semester, Div. C