VIT Vidyalankar Institute of Technology
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An Autonomous Institute Affiliated to University of Mumbai

# BYTES

## DEPARTMENT OF COMPUTER ENGINEERING

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**Vision of the Department**

To be recognized as a Centre of Excellence in the field of Computer Engineering where learners are nurtured in scholarly environment to evolve into competent Computer Engineering professionals to benefit society

**Mission of the Department**

1. Evolve a curriculum which emphasizes on strong engineering fundamentals with the flexibility to choose advanced courses of interest and gain exposure to tools and techniques in Computer Engineering.
2. Encourage a teaching-learning process in which highly competent faculty share a symbiotic association with the institutes of repute.
3. Facilitate creation and dissemination of knowledge through a digitally-enabled learning environment.
4. Develop academic and infrastructural facilities with modern equipment and other learning resources and encourage reciprocal sharing with other institutes through networking.
5. Establish a centre of excellence to enhance academia – industry partnership and work on collaborative projects.

**Programme Educational Objectives (PEO)**

1. To enable the pursuit of knowledge in the field of Computer Engineering and contribute to the profession and employability of the students.
2. To engage in research, generate the employment through entrepreneurship and work effectively in multidisciplinary environment.
3. To understand the human, social, ethical and environmental context of their profession and contribute positively to the needs of individuals and society at large.

## WHAT'S INSIDE



## PROF. DR. SACHIN BOJEWAR

HEAD OF DEPARTMENT, COMPUTER ENGINEERING

!!Happy New year to everyone!!

Literacy is the process and prostrating rigors is the success. To be what you want, you need to rain yourself with tolerance and zeal to achieve it. The trip to the destination is always a beautiful bone . I prompted to all my youthful brilliant minds one mantra for success that one should study dashingly; if we will study dashingly also with little hard work, we can attain heights.

The fact that masterminds are a strain with logical thinking and logic chops that isn't participated by the non-technical branch of education, and this is veritably critical in the progress that technology is making to come more inclusive and intertwined.
All the best for the new semester.

> If someone is going down the wrong road, he doesn't need motivation to speed him up. What he needs is education to turn him around.
> Jim Rohn

## CSI EVENT: Film Fiesta


DATE:18th October 2022

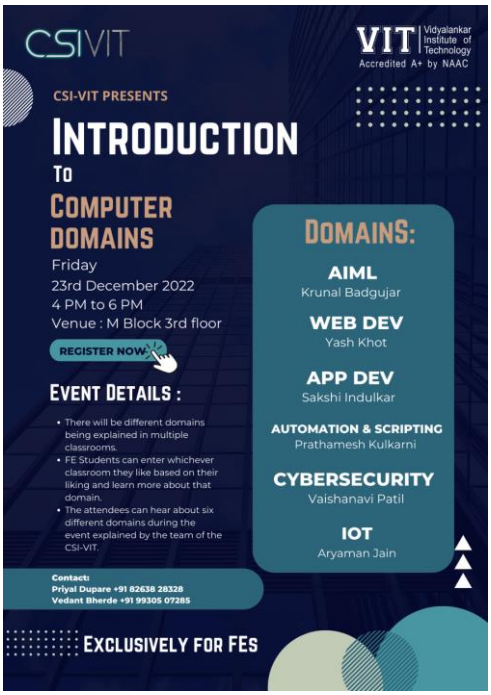
The movie screened was The Imitation Game. Released in 2014, the movie is based on legendary British Mathematician Alan Turing's important life events. The main plot revolves around Turing's breakthrough in creating and developing Christopher, a phenomenal machine to rival the Germans' own code, Enigma, along with assistance from his colleagues.

## CSI EVENT: Introduction to Computer Domain

DATE:23rd December 2022

Introduction to Computer Domain was conducted for the students of CSI VIT (Computer Society of India). The Event was aimed at experiencing core Computer domains through live interactions and demonstration of project and it was aimed to give knowledge to First Year Engineering students about the requirements and knowledge of each domain.

There were six important domains identified from computer science AI/ML, cybersecurity, web development, app development, IOT and automation & Scripting




## Department Staff

### PROF. DEVENDRA PANDIT
ASSISTANT PROFESSOR

**EDUCATION QUALIFICATION:**
BE COMPUTER ENGINEERING

**WORKING EXPERIENCE:**
30 YEARS

**AREA OF SPECIALIZATION:**
C/C++/JAVA PYTHIN PROGRAMMING
DATA STRUCTRES AND ALGORITHMS
DATABASE MANAGEMENT

### PROF. RAVINDRA SANGLE
ASSISTANT PROFESSOR

**EDUCATION QUALIFICATION:**
PURSUING PhD

**WORKING EXPERIENCE:**
16 YEARS

**AREA OF SPECIALIZATION:**
DISCRTE MATHEMATICS
AUTOMATA THEORY
SOFTWARE ENGINEERING

> The beautiful thing about learning is that nobody can take it away from you.
> B.B. King

## Student's Speak

**Ishaan Apte**

Studying at VIT has truly been an incredibly transforming experience for me, our institution adopts a holistic approach for all-around student development ensuring that we are ready to take on challenging real-life situations despite the area of concern. A wide-spread campus area coupled with an amazing corporate infrastructure provides the best environment for learning and growth that one can ask for. We are blessed to have top-notch professors who are extremely approachable and mentor us in various disciplines. Our professors provide us with bountiful opportunities every day, be it internship opportunities, projects, or writing research papers. I would like to take this opportunity to especially thank Professor Amit Nerurkar who is guiding me through publishing my research paper.

**Ishaan Apte TE-A**

The state-of-the-art laboratories and classrooms equipped with the latest technological tools never cease to amaze me. The best part about learning at VIT is the quality teaching imparted by our professors, each concept is covered in a manner that not only elucidates its nitigrities but also its practical usage. Apart from the educational aspects, the eclectic variety of events organized by committees like CSI, GDSC, and ACM make sure to give us a holistic experience and plentiful opportunities to participate in various fests, events and seminars., To summarise, I would gladly say that my experience at VIT has been nothing short of amazing, giving me a sense of fulfilment and achievement.

## CESA Event: Hello Hacktober

CESAVIT

Date and Time: 4th October 2022 4:00-6:00 pm
Speaker: Mr. Mahesh Babar

CESA organized an event on Git, GitHub and open source on account of the Hacktober fest. The guest speaker Mr. Mahesh Babar who is an engineer, full stack developer and a GitHub contributor, explained the importance, benefits and overall functioning of GitHub. The steps to set up Git, GitHub and linking it with VS code using python as the language, he explained the process and encouraged the learners to follow him simultaneously. He also mentioned various competitions on the open source platform while giving the details on the ways to participate in the Hacktoberfest and encouraging the geeks to make their contributions on any topic or projects as per their field of interests.

Today, GitHub is the most popular resources for developers to share code and work on projects by contributing individually.


The event was absolutely informative and students were extremely excited towards contributing and collaborating towards open source platforms.

> I didn't finish college, which is really weird because they awarded me the Alumni of Distinction recently.
> Joely Fisher

## Know an Alumnus Samruddhi Gawande

Samruddhi Gawande

It's difficult to sum up the experience of four years in a few lines. To start, I consider myself very lucky to have been a part of VIT. There is something motivational and special in our college environment that made studying and co-curricular activities equally enjoyable. All the professors were helpful and always provided appropriate guidance. Prof Swapnil Sonawane, Prof Amit Nerurkar, Prof Snehal Andhare and Prof Ravindra Sangle, to mention a few, are the incredible faculty I loved to study under. They undoubtedly inspired me to reach my full potential. It feels surreal to think that almost two years have already passed since I graduated. VIT has given me a lot in terms of academia. Our batch lost a year and half of college experience to Covid but even then, the professors didn't fall short on their ability in staying connected to us whilst teaching remotely..

My class was fortunate enough to get Swapnil Sir and Amit Sir for two semesters because their detailed notes and elucidate lectures were more than fruitful. We never felt hesitant to ask any faculty member a question or contact them about anything. Everyone should engage in as much communication with the professors as they can.

I want to emphasize the importance of participating in extracurricular and co-curricular activities, and our college offers a wide range of opportunities. I had the absolute pleasure of being the Publicity Head of CSI in third year and I take pride in the fact that most of the team members in CSI end up being from the Computer Department. Fundamentally, being a part of VIT Student Council and CSI is responsible for shaping the ways I think and how I understand the people around me. The qualities developed and the skills gained have stayed with me to date and unsurprisingly are helping me navigate the corporate world. So, get outside your comfort zone and explore everything VIT has to offer.

The best advice I would give is- When you're in college do something hard because you're not going to do that hard thing on your own. Another piece of suggestion would be to follow your heart and fill your niche because hundreds will graduate every year and making your own mark is important.

I have found friends for life at this place and needless to say, my four years at VIT have been fantastic and a memory to cherish for a lifetime.

> Great teamwork is the only way we create the breakthroughs that define our careers.
> Pat Riley

# DSA Master Class: CSI Event

DATE:27th December 2022 to 29th December 2022


DSA Master Class was a 3 day online event conducted by CSI in collaboration with Tech Analogy. It was a crash course on DSA, CN, Competitive Programming and Interview Preparation. DSA Master Class was a 3 day online event conducted by CSI in collaboration with Tech Analogy. It was a crash course on DSA, CN, Competitive Programming and Interview Preparation.

**Day 1:** The 1st day of the event commenced at 7pm on the online platform YouTube and the speaker for the session was Mr. Abhinav Awasthi. A complete in depth introduction was given about DSA as what, why and how is it important to engineers. Topics related to DSA such as arrays and sorting techniques were covered.

**Day 2:** The 2nd day of the event commenced again at 7pm on the same online platform. The speaker also discussed about how to approach DSA based problems.

**Day 3:** The 3rd day of the event was conducted, and participants were guided on topics like DBMS, OS, CN on which interview questions are frequently asked.

# Departmental Update

1. Prof. Kavita Shirsat attended one-week Online Short-term Training Program (STTP) on "SMART BHARAT: Applications of IOT in December 2022 at D.Y. Patil University
2. Prof. Swapnil Sonawane participated in 17th Avishkar Competition (Research Convention) in December 2022.
3. Prof. Amit K. Nerurkar participated in 17th Avishkar Competition (Research Convention) in December 2022.
4. Prof. Prakash Parmar participated in 17th Avishkar Competition (Research Convention) in December 2022.
5. Suyog Havare, Renuka Patwari, Yash Jagdale, Vibodh Bhosure of TE CMPN and Prof. Divya Surve participated in 17th Avishkar Competition (Research Convention) in December 2022
6. Final round of 17th Avishkar Competition 2022 (Research Convention) was hosted in December 2022 at VIT.
7. Deep Shahane, Samiksha Pansare; Riya Ingale; Rutvik Narkar Amit Nerurkar presented and published paper Music Fiesta-The Recommendation System in IEEE conference and journal at International Conference on Technology Innovation and Its Applications (ICTIIA) in October 2022

# Machine Model with Python: CSI Event

DATE:27th December 2022 to 29th December 2022

A workshop was held on ML models with Python for the students of Vidyalankar Institute of Technology by the CSI-VIT committee. It was a two day workshop held on 6th and 7th October, 2022 at the college campus from 4pm to 6pm. The speakers for the event were final year students of VIT, Utkarsh Salvi and Dishant Kumar. The main motive of the workshop was to educate students about machine learning and proposing Ml models using Python and Anaconda since Python being a versatile language is an important tool for Data Science and Machine Learning is the future.

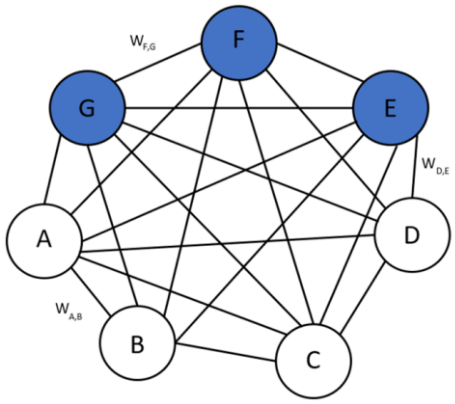
> Technology may not replace great teachers, but technology in hands of great teachers can be transformational
> George couros

# Faculty Article: Boltzmann Machine in Deep Learning

What is Boltzmann Machine?

Boltzmann machine is a part of unsupervised learning where input to the model is provided and relationship between the features of the data is decided by the model. 'A Boltzmann machine is a network of symmetrically connected neurons like units that makes stochastic decisions. It uses a concept of undirected model where connection goes both the ways' Purpose of Boltzmann machine is to optimize the solution and discover the features from datasets composed of binary vectors.

Graphical representation of Boltzmann Machine:




·Each undirected graph represents the dependency and is weighted with weights

·In the diagram, there are 3 hidden units (blue) and 4 visible units (white), Visible (white) layer is also called as input layer Input1-A, Input2-B, Input3-C and Input4-D, Hidden (blue) layer neurons are not visible.

·All inputs are connected to each other, and there is no output layer.

·Here, the machine tries to find relationship between the inputs using the features.

Boltzmann machines have a simple learning algorithm that allows them to discover interesting features in datasets composed by binary vectors.

The Stochastic dynamics of a Boltzmann Machine

When Unit i is given the opportunity to update it's binary state,

Unit i first computes its total input, Zi which is the sum of its own bias, bi

And the weights on connections coming from other active units.

zi= bi+ jsj wij

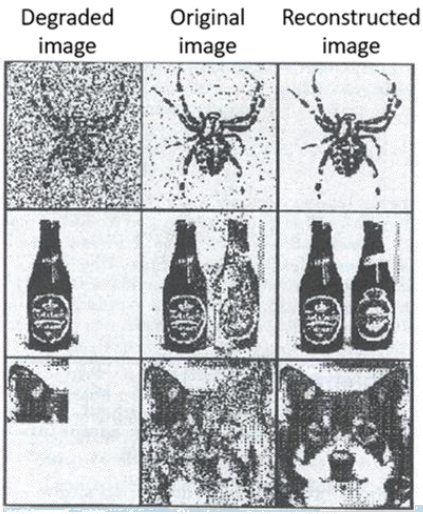
where, wij = weight on the connection between i and j

sj = 1 if j is on

= 0 otherwise

Boltzmann machine is the stochastic extension of Hopfield nets.

It enables the storage of many more patterns than Hopfield nets.




It also enables the computation of probabilities of patterns and completion of patterns.

Prof. Snehal Andhare

Applications of Boltzmann Machine:

- Filling out missing patterns
- Denoising patterns
- Computing conditional probabilities of patterns
- Classification

> Data is the pollution problem of the information age, and protecting privacy is the environmental challenge.
> Bruce Schneier

# Student Article: Threat Intelligence in Cybersecurity

Bhavesh Dhake BE-A

With the expanding threat landscape, practically every security analyst feels that a cyber assault is no more a question of if but of when. No company, no matter how large or little, is immune to the horrors of cyber assaults. Threat intelligence works in tandem with security policies to reduce an organization's cyber security risk. Threat intelligence, also known as cyber threat intelligence, is information that an organization utilizes to understand the risks that have targeted, will target, or are presently attacking them. This data is used to prepare for, prevent, and identify cyber-attacks seeking to exploit valuable resources.

The wide unknown may be thrilling in many settings, but it can also be scary in a world where any number of cyber threats might bring an organization to its knees. Threat intelligence may assist firms in learning more about these threats, developing effective defense systems, and mitigating risks that could harm their bottom line and reputation. After all, focused attacks need targeted defense, and cyber threat information enables more proactive protection.

## Why is it important?

Threat intelligence systems collect raw data from a variety of sources on new or existing threat actors and threats. This data is then examined and filtered to provide threat intelligence feeds and management reports including information that automated security control systems may use. The fundamental goal of this sort of security is to keep businesses informed about the hazards posed by advanced persistent threats, zero-day threats, and exploits, as well as how to guard against them.

## Are there any types of Threat Intelligence?

Depending on the information source, original needs and objectives, and intended audience, threat intelligence can be presented in a variety of ways and formats. The process of simplifying complex data processing and analysis is accomplished by categorizing threat intelligence data depending on its type. The four most prevalent forms of threat intelligence are:

1. Strategic 2. Tactical 3. Technical 4. Operational

## So, what can we understand from this?

Threat intelligence technologies are proliferating in the market as security firms compete to meet customer demand for assistance with the expanding amount of threats. But not all are made equal. To function properly, this degree of protection must be active every second of every day, scanning the huge and diverse expanse of internet material for possible security risks. And that is why, these technologies are enhancing the cybersecurity posture using AI/ML.

Organizations must collect both local and global threat feeds before feeding the obtained signs of compromise, such as malicious

## UPCOMING EVENTS

- DEPARTMENT WILL BE CONDUCTING ORIENTATION FOR SE TE AND BE STUDENTS ON 11TH JANUARY 2023.
- CSI WILL HOST CONFERENCE ON CYBERSECURITY WITH CYBERFRAT IN MARCH 2023
- CSI WILL HOST 24 HOURS HACKATHON WITH CESA IN FEBRUARY 2023
- CESA WILL HOST INTERCOLLEGE WEBSITE DESIGN COMPETITION IN FEBRUARY 2023
- CSI WILL HOST ITS FLAGSHIP EVENT ETHUSIA IN MARCH 2023

> Teaching is more than imparting knowledge; it is inspiring change. Learning is more than absorbing facts; it is acquiring understanding.
> William Arthur Ward