COURSE DURATION
2 MONTHS

TEACHING HOURS
40+ HOURS

LAB HOURS
40+ HOURS

AI POWERED AUGMENTED REALITY/ VIRTUAL REALITY (AR/VR) COMPUTER

VISION BUILDER

Career Pathway Skilling Program for Engineering Students

In Collaboration with

FITT

FOUNDATION FOR INNOVATION AND TECHNOLOGY TRANSFER

भारतीय प्रौद्योगिकी संस्थान दिल्ली
Indian Institute of Technology Delhi

ABOUT COLLABORATION
FITT, IIT DELHI

Foundation for Innovation and Technology Transfer (FITT) at IIT Delhi has been the vanguard of knowledge transfer activities from academia since its inception in 1992. This techno-commercial organization from academia is counted amongst the successful such organizations. FITT provides superior program management services and is steadily increasing its operational landscape. The varied roles of FITT can be seen in enabling innovations and technopreneurship, business partnerships, technology development, consultancy, collaborative R&D, technology commercialization, development programs, corporate memberships etc. These roles are necessitated by the key agenda of the Foundation to showcase the Institute's "intellectual ware" to industry, and thereby unlock it's knowledge base and inculcate industrial relevance in teaching and research at IIT Delhi.

IIT Delhi is India's eminent academic and research institution. It co-develops a range of training programs from College level to working professionals and also on emerging areas like Blockchain, AI/ML, IoT, AR/VR & Cybersecurity. The CoE in IIT Delhi has been set up to conduct deep research and product development in these areas, particularly for critical infrastructures like Waterways, Smart Cities, Railways and Energy.

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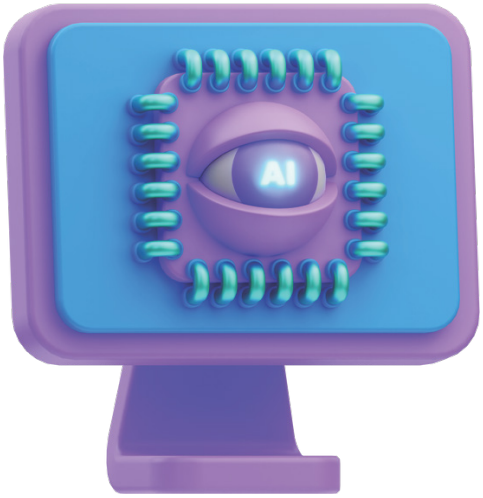
WHY SKILLING IN **COMPUTER VISION**

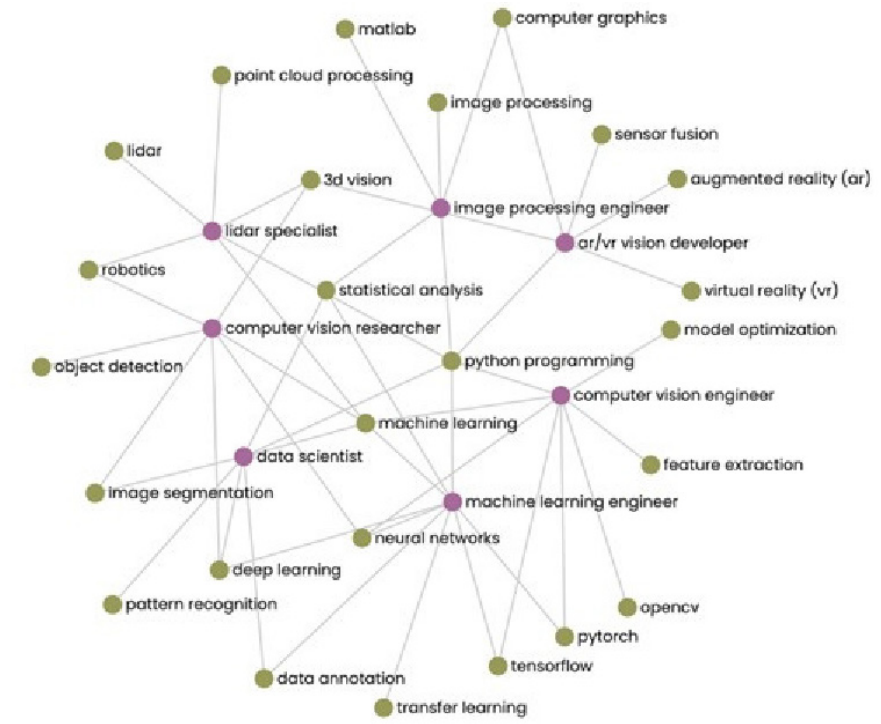
IS THE NEED OF THE HOUR

The digital world is generating massive amounts of visual data through images and videos. Computer vision provides the tools and techniques to extract meaningful insights from this vast and complex data. Enabling automation of tasks that traditionally required human vision, making it a critical need in today's technological landscape

In the e-commerce industry, computer vision is used for tasks like product recognition and visual search. This enhances the shopping experience by allowing users to search for products using images rather than text. Autonomous vehicles, drones, and robots heavily rely on computer vision for perception and navigation.



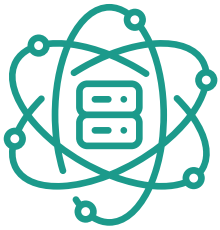
In fields such as augmented reality and virtual reality, computer vision is crucial for creating immersive and interactive experiences. It enhances user interfaces, gaming, and various applications that rely on visual interaction.



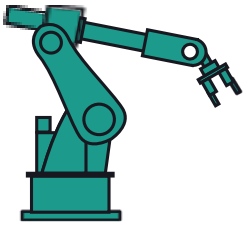
With the increasing need for security and surveillance, computer vision technologies like facial recognition, object detection, and tracking play a vital role in identifying and monitoring individuals and events. Computer vision contributes significantly to medical imaging, helping in the early detection of diseases, analysing medical scans, and improving diagnostic accuracy. This has a direct impact on healthcare outcomes.

As these technologies become more prevalent, the demand for skilled professionals who can develop and enhance computer vision algorithms continues to rise.

DATA SCIENTIST



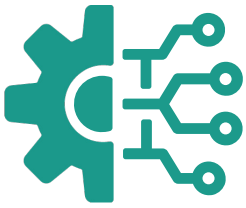
Data scientists with computer vision skills work on analysing and interpreting complex visual data. They may be involved in preprocessing image data, feature extraction, and building models for predictive analytics.



ROBOTICS ENGINEER

Involves integrating computer vision systems with robotic platforms. Professionals in this role work on enabling robots to perceive and interact with their environment using visual information.

AUTONOMOUS VEHICLE ENGINEER



Works on developing computer vision systems for autonomous vehicles, including tasks such as object detection, lane tracking, and obstacle avoidance.

AUGMENTED REALITY (AR) DEVELOPER

Creates applications that overlay digital information onto the real world. Computer vision is essential for tracking and recognizing objects in the environment.

VIRTUAL REALITY (VR) DEVELOPER

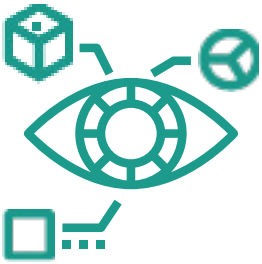
Uses computer vision to enhance the immersive experience in virtual environments. This includes tracking head movements and gestures.

BIOMEDICAL IMAGING SCIENTIST

Applies computer vision techniques to medical imaging for tasks like disease detection, diagnosis, and treatment planning.

SURVEILLANCE SYSTEM ANALYST

Involves designing and implementing computer vision solutions for video surveillance, including object tracking, facial recognition, and anomaly detection



QUALITY CONTROL ENGINEER

Applies computer vision to automate quality inspection processes in manufacturing, ensuring products meet specified standards.

PRODUCT MANAGER FOR COMPUTER VISION PRODUCTS

Manages the development and deployment of computer vision products, collaborating with cross-functional teams and ensuring alignment with business goals.

Computer vision researchers and professionals contribute to advancements in the field, pushing the boundaries of what is possible.
This ongoing research drives innovation and the development of new applications.

CONTENT AND CURRICULUM

This course aims to provide students with a basic foundation in Machine Learning (ML) and Artificial Intelligence (AI) with a specific focus on Computer Vision (CV) with basic insight into Gen AI, AR/VR. The objective is to equip learners with the knowledge and skills to apply ML and AI techniques to solve real-world industry problems in the context of computer vision .

COURSE OBJECTIVES:

- Provide students with a basic foundational knowledge of ML and AI, including algorithms, techniques, and key concepts.
- Introduce the fundamentals of Computer Vision, including image processing, feature extraction, and object recognition, and their role in AI and ML.
- Emphasize the real-world applications of ML, AI, and CV in industries such as healthcare, manufacturing, autonomous vehicles, and more.
- Develop basic practical skills to implement AI and CV solutions, enabling students to work on industry-specific projects and challenges.

PREREQUISITES

- High school diploma or equivalent.
- Basic understanding of mathematics and programming fundamentals.
- Familiarity with at least one programming language is beneficial but not mandatory.
- Access to a computer with internet connectivity for programming assignments and project work.

LEARNING OUTCOMES

Upon completing this course, students should be able to:

- Understand the basic fundamentals of ML, AI, and CV.
- Apply ML and AI algorithms to process visual data.
- Implement basic CV techniques for industry-specific applications.
- Evaluate and troubleshoot basic ML and AI models in the context of CV.
- Identify and address ethical considerations related to basic CV applications in industry.

MODULE	TOPICS COVERED
Module 1: Introduction to AI and ML for Computer Vision	Understanding Machine Learning (ML) and Artificial Intelligence (AI)
	Types of ML and AI for Computer Vision
	Historical Development and Industry Impact
Module 2: Introduction to Computer Vision (CV)	Basics of Computer Vision
	Image Processing Techniques
	Feature Extraction and Transformation Neural
Module 3: Basic Deep Learning and Neural Networks	Networks and Deep Learning Concepts
	Convolutional Neural Networks (CNNs)
	Recurrent Neural Networks (RNNs)
	Generative Techniques for Computer Vision
Module 4: Overview of Object Detection and Recognition	Object Detection Techniques
	Image Classification and Recognition Face
	and Emotion Recognition Industry
	Applications of CV including AR/VR
Module 5: Practical Basic AI and CV Projects	Implementing AI and CV Solutions
	Industry-Specific Projects
	Project Presentations and Evaluation

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ENROLLMENT PROCESS

The FITT-IIT Delhi course is being provided to selected students free of cost by ODSA.

Eligibility: Current students as well as past pass-outs of Odisha engineering colleges and existing working professionals of Odisha. (Limited seats only)

Process: Kindly fill out the below form, pay registration fees - Rs.200/- and submit the form and receipt to your college in charge

PLEASE FILL IN THE BELOW FORM

Name.....

Graduation College Name.....

Employment Details.....

Year..... CGPA.....

Phone..... E-Mail.....

Aadhar Number.....

Fathers Name.....

☐ AI Powered AR/VR (CV) Builder

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CERTIFICATE

OF COMPLETION

PROUDLY PRESENTED TO

Demo

AUGMENTED REALITY/ VIRTUAL REALITY (AR/VR)
COMPUTER VISION AND AI BUILDER

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SIGNATURE

SIGNATURE

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