

UNIT 04:

Technological Innovation and Intellectual Property

- Technology and Entrepreneurship
- Intellectual Property Basics (Patents, Trademarks, Copyrights)
- Patent Search and Analysis
- Strategies for Protecting Intellectual Property
- Ethical Considerations in Technology and Innovation

Technology

- ❑ **Definition:** Technology has revolutionized the way we live, work, and connect with each other. It has also had a profound impact on entrepreneurship, providing new opportunities for entrepreneurs to start and grow businesses, reach customers, and streamline operations.

Entrepreneurship

- ❑ **Definition:** Entrepreneurship is the process of creating, launching and running a new business venture. It involves taking risks, innovating and solving problems.

Example 1: Steve Jobs and Apple

Example 2: Deepinder Goyal & Zomato

The impact of technology on entrepreneurship

❖ Disruptive Innovation

Disruptive technology creates **new markets and displaces existing products.**

Example:

Netflix: Originally a DVD rental service, Netflix transitioned to streaming, disrupting traditional cable and video rental businesses. Its use of data analytics to recommend content also showcased how technology can enhance customer experience.

❖ E-commerce and online marketplaces

E-commerce and online marketplaces have revolutionized the way businesses sell and distribute their products and services. The rise of **online shopping has transformed retail.**

Example:

- **Amazon:** Starting as an online bookstore, Amazon expanded into various product categories, using technology for logistics, customer personalization, and cloud computing (AWS), which has further enabled other businesses.

❖ Cloud computing and data management:

Cloud computing refers to the **delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence**—over the Internet (“the cloud”) to offer faster innovation, flexible resources, and economies of scale.

Example:

- **Salesforce:** This cloud-based CRM platform enables businesses to manage customer relationships efficiently, demonstrating how software can enhance productivity and reduce costs.

❖ Social media and digital marketing

Social media and digital marketing have transformed the way **businesses reach and connect with their customers.**

Example:

Instagram: Brands use Instagram for marketing and customer engagement, utilizing visual content to drive sales and build community, often leading to the rise of influencer entrepreneurship.

❖ Mobile technology and app development

Mobile technology has dramatically changed the way we **live and work, and it has also had a significant impact on entrepreneurship.**

Example:

- **Uber:** Leveraging mobile technology, Uber transformed transportation by connecting riders with drivers through a simple app, creating a new model for ride-sharing.

❖ Fintech

Financial technology has revolutionized banking and personal finance.

Example:

Paytm

Overview: One of India's largest digital payment platforms, Paytm offers mobile wallets, payment processing, and e-commerce services.

Key Features: QR code payments, Paytm Wallet, Paytm Bank.

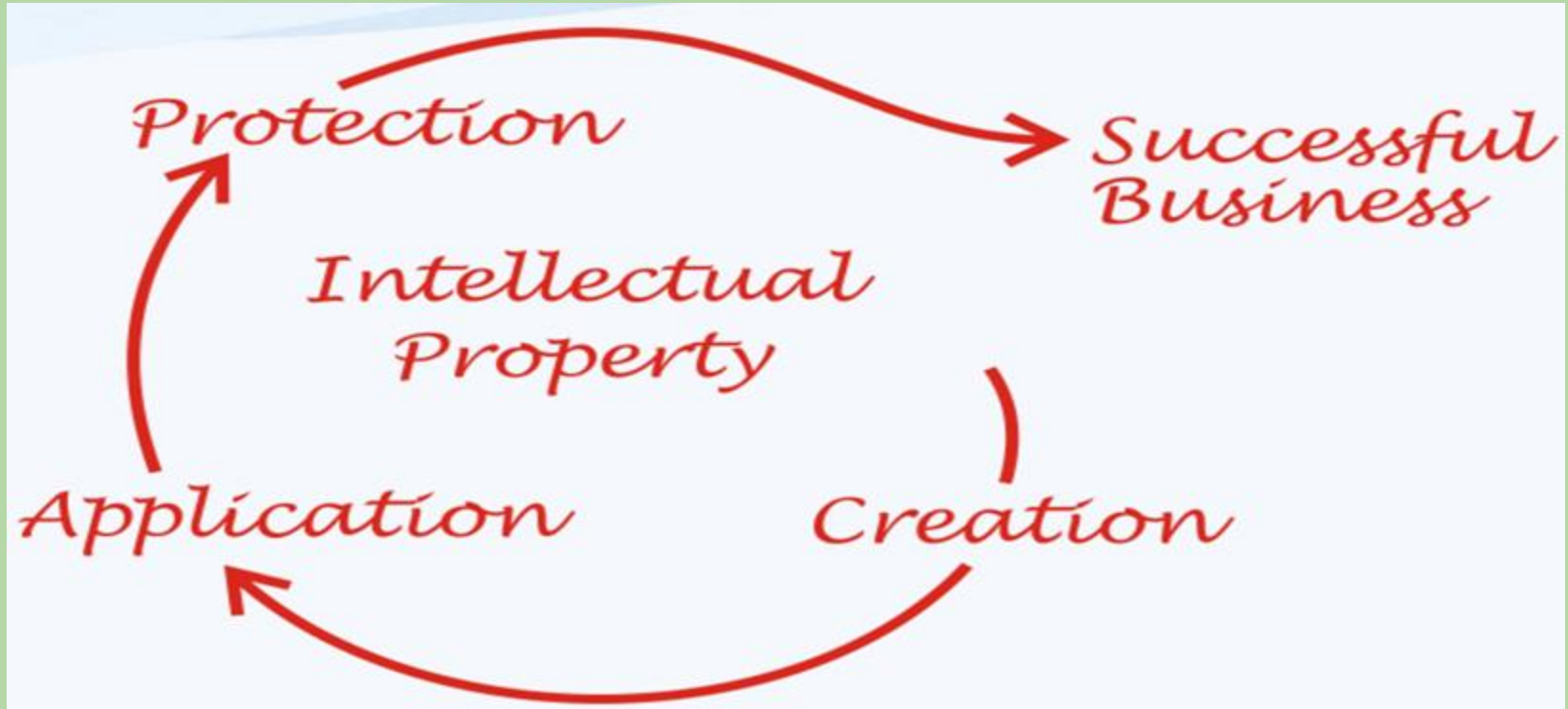
❖ Ai and automation

AI refers to computer systems that can perform tasks that typically require human intelligence, such as recognizing patterns, making predictions, and learning from experience.

Example:

ChatGPT: Companies use AI models like ChatGPT for customer service, content creation, and data analysis, enabling them to operate more efficiently and enhance customer experiences.

❖ Intellectual Property Basics (Patents, Trademarks, Copyrights)



Definition:

Intellectual property is a broad categorical **description of a set of intangible assets that are owned by a company or individual**. It's **legally protected from outside use or implementation without consent**. An intangible asset is a non-physical asset.

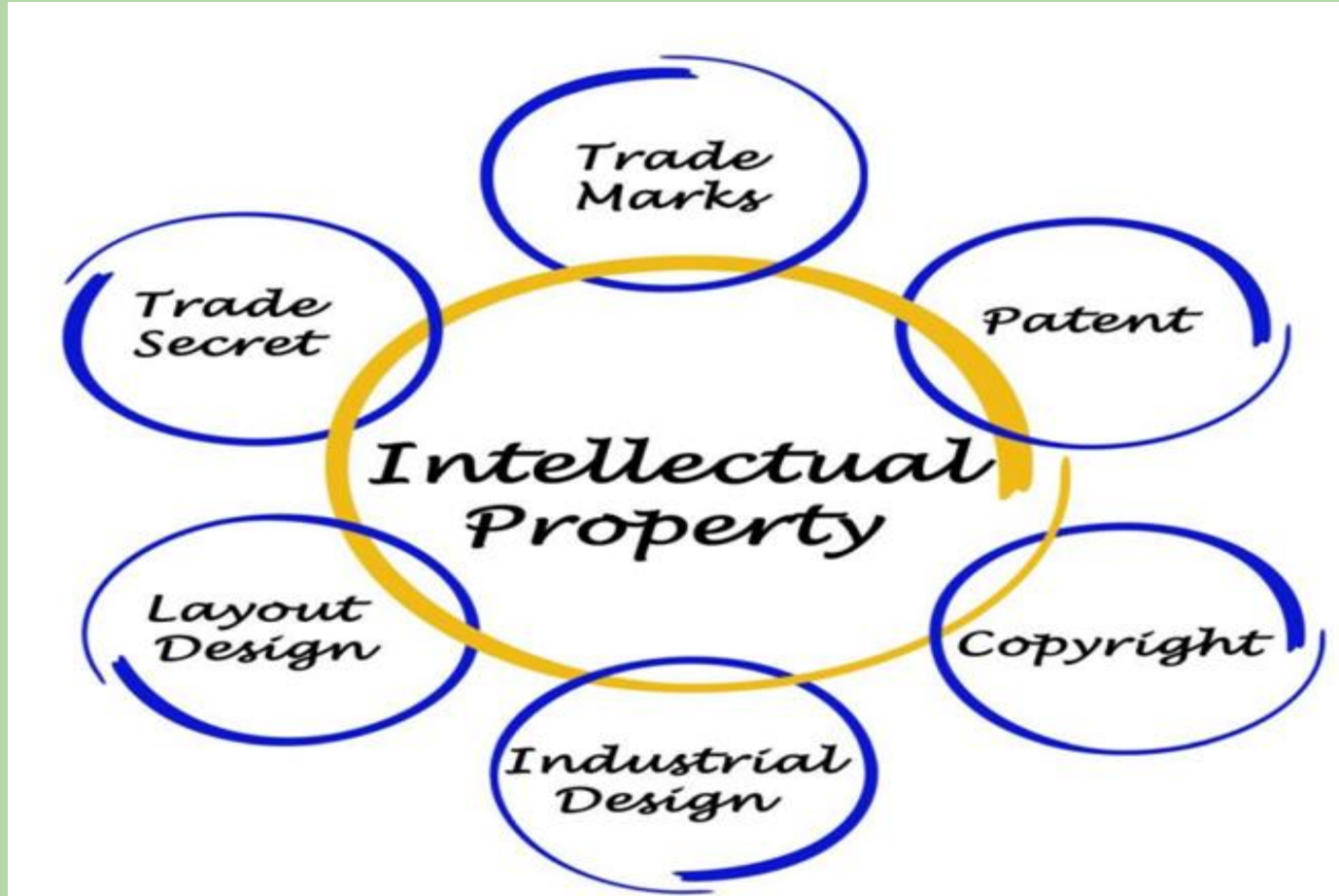
It would be enable creators and inventors to **earn recognition and financial benefit** from their work



❖ Importance of intellectual property (IP)

- Encourages Innovation and Creativity:
- Economic Growth:
- Consumer Trust and Safety:
- Competitive Advantage:
- Revenue Generation:
- Cultural Preservation:
- Global Trade:
- Encourages Collaboration:

Types of Intellectual Property(IP)



Trademark

- Trademark is a **word, phrase, design, colour, sound, logo** anything which can help to **identify the product** and distinguish it from the other product.

Examples:

- Logos (e.g., the Nike Swoosh)
- Brand names (e.g., Coca-Cola)
- Taglines (e.g., "Just Do It")



YAHOO!



BBC



Walmart

CNN



Coca-Cola

FedEx Corporation

Google



NOKIA
Connecting People

HONDA
The Power of Dreams



IBM



TOYOTA



Mercedes-Benz

Mobil



Registration Procedure:(<https://www.ipindia.gov.in/trade-marks.htm>)

1. Trademark Search

Purpose: check for existing similar marks that could conflict with your application.

2. Filing the Application

Types of Applications:

- **Individual Application:** For sole proprietors or single entities.
- **Joint Application:** For multiple applicants.

Filing Options:

- **Online:** Via the Trademark Registry's e-filing portal.
- **Physical:** Submit the application at the relevant Trademark Registry office.

3. Examination of the Application

Process:

- After filing, the application is assigned to a trademark examiner.
- The examiner reviews the application for compliance with legal requirements.

Outcome:

- If there are no objections, the application proceeds to publication.

4. Publication in the Trademark Journal

- Once accepted, the trademark application is published in the Trademark Journal.

5. Opposition Period

Duration: The opposition period lasts for 4 months from the date of publication.

6. Registration of Trademark

- the trademark is registered. The applicant receives a registration certificate, and the trademark is protected for 10 years.

7. Renewal of Trademark

- The trademark can be renewed indefinitely for periods of 10 years by filing a renewal application before the expiration date.

Copyright

- ❑ Copyright is the exclusive right to protect original work of an author that is literary and artistic work which includes writing, music, poem, short stories, fine arts such as paintings and sculptures, and technology-based such as computer and electronic databases.
- ❑ **Examples:**
 - Books and novels
 - Music compositions
 - Software programs



Registration Procedure for Copyright in India(<https://copyright.gov.in/>)

Here's how to register copyright in India:

Step 1: Prepare Required Documents

- **Application Form:** Complete Form XIV.
- **Work Sample:** Provide a copy of the work (e.g., manuscript, audio/video recording).
- **Details of the Author:** Name, address, and nationality of the author(s).
- **Date of Creation:** The date when the work was created.
- **Declaration:** Work is original and does not infringe on any other copyright.

Step 2: Filing the Application

- **Online Submission:** e-filing portal.
- **Physical Submission:** person or by post.

Step 3: Payment of Fees

- it is a single or multiple works. The fee structure may vary, so check the latest rates on the Copyright Office website.

Step 4: Examination of Application

Step 5: Registration

- Issues a registration certificate. This process typically takes several months, depending on the workload of the office.

Step 6: Certificate Issuance

- Once registered, the copyright owner receives a certificate of registration, which serves as legal proof of ownership and can be used in case of disputes.

❖ Patent

- An exclusive right granted by a country to the owner of an invention to make, use, manufacture and market the invention
- A patent can be granted for a product, process, or an improvement to existing technology.



Example:Tata Motors' Patent:

- **Invention:** The car runs on compressed air stored in a tank. This air is used to drive the pistons in an internal combustion engine, eliminating the need for conventional fuel.
- **Patent Filed:** Tata Motors filed patents for various components and processes involved in this technology, such as the air-compression systems and engine modifications.
- **Impact:** The invention aims to offer a more eco-friendly and cost-effective alternative to petrol or diesel-powered vehicles.

How many types of Patents are there?

3 Different Types of Patents



Design

Protects the design or exterior look of an invention.



Utility

Protects inventions such as machines, processes, or systems.



Plant

Protects the invention of new plant variants.

1. Utility Patents (Invention Patents)

- **Definition:** Utility patents are granted for new and useful inventions, including processes, machines, manufactured items, or compositions of matter.
- **Example:**
 - **Tata Motors' Air-Powered Car:**

Duration: 20 years from the date of filing.

2. Design Patents (Industrial Designs)

- **Definition:** Design patents protect the **aesthetic or ornamental aspects** of a functional item. It is about how a product looks, including shape, pattern, and color arrangement.
- **Example:**
 - **Royal Enfield Motorcycles: unique shape of its fuel tanks and exhaust pipes**

Duration: 10 years, extendable for an additional 5 years.

3. Plant Variety Protection

- **Definition: Protection of Plant Varieties and Farmers' Rights Act (PPVFR Act), 2001.** It allows for the registration of new, distinct, and stable varieties of plants.
- **Example:**
 - **Krishi Rasayan's Hybrid Paddy Seeds:** Krishi Rasayan filed for protection of its **hybrid paddy seed variety** that offers better resistance to diseases and higher yields, securing the company's right over the variety.
- **Duration:** 15 years for trees and vines, 18 years for other crops.

Patent Registration Steps(<https://iprsearch.ipindia.gov.in/publicsearch>)

1. Patentability Assessment

- **Check for Patentability:** Ensure that the invention meets the patentability criteria:
- **Action:** Conduct a **patent search**(such as the Indian Patent Office database, USPTO, WIPO).

2. Drafting the Patent Application

- **Provisional Specification (Optional):**
- **Complete Specification:**

Action: Hire a patent attorney or agent to help draft the patent specification, especially the **claims**, which define the scope of your invention's protection.

3. Filing the Patent Application

- **Indian Patent Office (IPO)** either **physically** at one of the IPO branches (Kolkata, Delhi, Mumbai, Chennai) or **online** through the IPO's e-filing system.
- The types of applications that can be filed include:
 - **Provisional Application**
 - **Complete Application**
 - **Divisional Application** (if more than one invention is disclosed in the main application)
 - **Patent of Addition** (for an improvement or modification of an already filed patent)

Action: Submit Form 1 (Application for Patent), Form 2 (Provisional or Complete Specification), Form 3 (Statement and Undertaking), and Form 5 (Declaration of Inventorship).

4. Publication of the Patent Application

- **Official Patent Journal** after 18 months from the filing date.
- **Form 9 for early publication**, in which case the application is published within **1 month** of filing the request.

Action: The invention is now publicly visible, but the rights to the invention are still pending until the patent is granted.

5. Request for Examination (RFE)

- **Form 18** within **48 months** from the priority date (filing date).

Action: File the RFE as soon as possible, as the examination process can be time-consuming.

6. Examination of the Application

- **Examination Report** (First Examination Report or FER) with **objections**, if any.

Action: Respond to the objections raised in the FER within **6 months** (extendable by 3 months)

7. Pre-Grant Opposition (Optional)

- filing a **pre-grant opposition**.

Action: Address any third-party opposition by submitting appropriate responses or documents.

8. Grant of Patent

- patent is published in the **Patent Journal**, and the patent holder is issued a **patent certificate**.

Action: The patent holder now has exclusive rights to the invention..

9. Post-Grant Opposition (Optional)

- Within **12 months** of the patent grant, a third party may file a **post-grant opposition**.
- **Action:** Defend the patent by responding to the post-grant opposition, if applicable.

10. Payment of Renewal Fees

- **annual renewal fees**, starting from the **3rd year** after the patent is granted. If the renewal fees are not paid, the patent lapses.

Action: Pay the renewal fees regularly to maintain the patent for up to **20 years**.

What is a Trade Secret?

A **trade secret** refers to **confidential business information that provides a company** with a competitive edge. This can include:

- Formulas
- Manufacturing processes
- Designs
- Business methods
- Client lists or strategies

For information to qualify as a trade secret, it must:

1. **Not be generally known** to the public or competitors.
2. **Have economic value** derived from its secrecy.
3. The owner must take **reasonable steps** to protect its confidentiality.



Protection of Trade Secrets in India:

India, unlike countries such as the U.S. or the EU, does not have a dedicated **Trade Secrets Act**. Instead, trade secrets are protected under **contractual agreements** and other existing laws.

Example: **Mr. Diljeet Titus, Advocate v. Mr. Alfred A. Adebare and Ors (2006):**

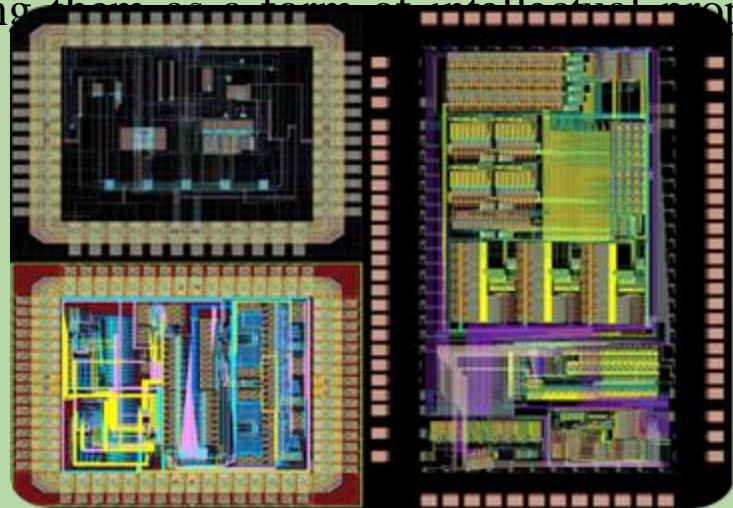
- **Facts:** Diljeet Titus, a prominent lawyer, sued his former associates, accusing them of taking confidential case files and client information when they left his firm.
- **Issue:** Titus sought an injunction against his former associates for misappropriation of confidential legal files and trade secrets.
- **Court Ruling:** The Delhi High Court ruled in favor of Titus, granting an injunction and recognizing that case files, legal documents, and client information are protectable as trade secrets. The court ordered the former associates to return the confidential files.
- **Significance:** This case is significant because it extended the concept of trade secret protection to the **legal profession**, recognizing that client files and legal strategies are proprietary and confidential.

What is a Layout Design?

A **layout design** refers to the **three-dimensional arrangement of various elements in a semiconductor IC**, including transistors, capacitors, resistors, and connections.

Protection of Layout Design in India

The **Semiconductor Integrated Circuits Layout Design (SICLD) Act, 2000** provides protection to original layout designs, recognizing them as a form of intellectual property in India.



Registration Process for Layout Design: (<https://sicldr.gov.in/sicw/about#>)

- 1. Filing an Application:** The creator or assignee must file an application with the **Semiconductor Integrated Circuits Layout Design Registry**.
- 2. Examination:** The application is examined to determine if the design meets the criteria of originality.
- 3. Publication:** The design is published to allow for any objections.
- 4. Certificate of Registration:** If no objections are raised, the layout design is registered, and the applicant is granted exclusive rights.

Example: Sahasra Electronics:


- **About the Company:** Sahasra Electronics is a Noida-based manufacturer of electronic components, including printed circuit boards (PCBs) and semiconductor assemblies.
- **Layout Design:** Sahasra invests in designing and producing its own **memory modules** and **smart card solutions**. To protect the unique layout of these semiconductor devices, Sahasra registers its designs under the SICLD Act, ensuring that competitors cannot copy their innovative layouts.
- **Example:** The company creates custom memory solutions for the automotive sector, and the layout design of these ICs is protected to prevent unauthorized duplication.

3. Patent Search and Analysis


<https://www.ipindia.gov.in/>

[Home](#) | [About Us](#) | [Policy & Programs](#) | [Achievements](#) | [RTI](#) | [Sitemap](#) | [Contact Us](#)


[Skip to Main Content](#) | [Screen Reader Access](#) | A- | A | A+ | [English](#)



Office of the Controller General of Patents, Designs & Trade Marks
Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry,
Government of India



Department for Promotion of
Industry and Internal Trade
Government of India



INTELLECTUAL
PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS


Patents ▾

Designs ▾

Trade Marks ▾

GI ▾

RGNIIPM ▾





Patents (Amendment) Rules, 2024 Published on 15 March 2024

Highlights:

- Introduction of Certificate of Inventorship (Rule 70A, Form-8A)
- Grace Period for filing an application for Patent (Rule 29A, Form 31)
- Clarity on filing divisional applications based on disclosure in provisional/complete specification or a further application (Rule 13(2A))
- Changes in filing Request for Examination (Rule 24B)
- Clarity in seeking extension of time to file response to FER (Rules 24(B)(6) and 24(C)(11))
- Ease of compliance in matters of Form-3 (Rule 12(3)) & Form-27 (Rule 131(2))
- Streamlining of Pre-Grant Opposition Process (Rule 55)
- Extension of timelines specified under the Rules (Rule 138)
- 10% Reduction in fee if renewal fee is paid in advance for at least 4 years (Rule 80)
- Fees: 50% reduction in fees for Patent of Addition, no fee for surrendering Patent, more granular breakup of fees for various extensions using form-4, new/revised fees for forms 7, 7A, 8, 8A and 31, revision in costs (4th Schedule), Concessional fee for small entities and educational institutions for filings under PCT (5th Schedule)

.....and many more.....



Copyright Office

SICLDR

ISA / IPEA

Comprehensive E-Filing

Public Search

Dynamic Utilities

WIPO IP Diagnostics

About Us

E-Gateways

NIPAM - IPR Awareness

Journals

Annual Reports

CG's Newsletter

Acts & Rules

Manuals / Guidelines

Controller's Decision

Publication

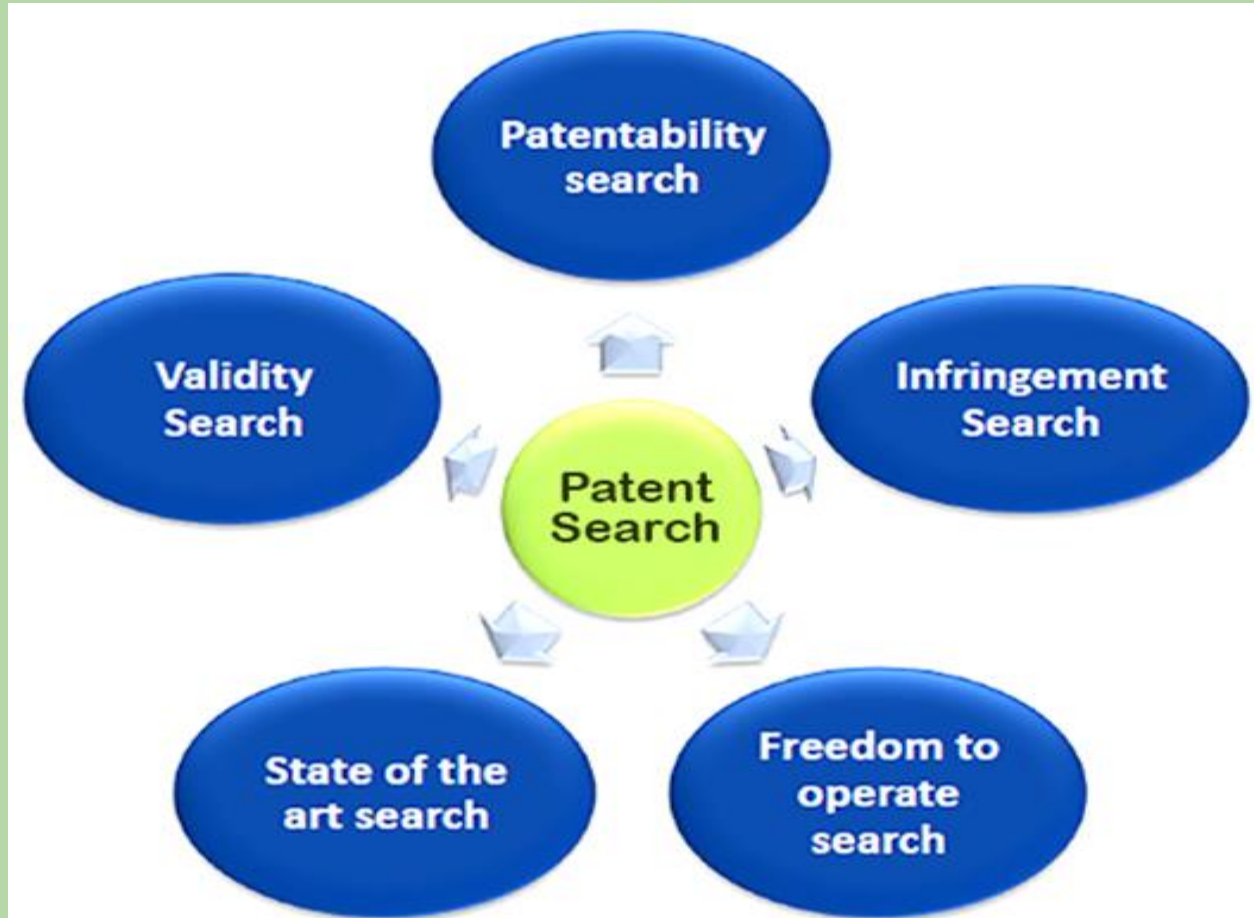
Resources

What is a Patent Search?

A **patent search** is a systematic investigation of **existing patents and published patent applications to determine whether a specific invention is novel and non-obvious**. The main objectives of a patent search include:

- 1. Prior Art Search:** Identifying existing patents or publications that might affect the novelty of a new invention.
- 2. Freedom to Operate (FTO) Search:** Determining whether **a product or process can be developed or marketed** without infringing on existing patents.
- 3. Patent Landscape Analysis:** Assessing the overall **IP landscape in a specific technology area, including trends, key players,** and potential licensing opportunities.

Types of Patent Searches:



1. Patentability Search (Prior Art Search)

Purpose: To determine whether an **invention is novel and non-obvious** by identifying existing **patents** and published applications that might impact patentability.

Process:

- Identify **keywords and relevant classifications related to the invention.**
- Search through various patent databases to find prior art.

Example:

- **Scenario:** An inventor develops a new type of **biodegradable packaging material.**
- **Search:** The inventor conducts a novelty search using keywords such as **“biodegradable,” “packaging,” and “sustainable materials”** across databases like IPO,USPTO and Espacenet.
- **Outcome:** The search reveals several existing patents for biodegradable materials, helping the inventor to **modify their design to ensure novelty before filing a patent application.**

Patent Search

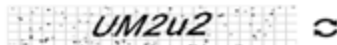
Patent Search

[Patent E-register](#)[Application Status](#)[Help](#)

Publication Type:

☐ Published☒ Granted

Application Date (National) ▾	From: <input type="text" value="dd/mm/yyyy"/>	To: <input type="text" value="dd/mm/yyyy"/>	AND ▾
Title ▾	<input type="text" value="computer"/>		AND ▾
Abstract ▾	<input type="text" value="e.g. computer keyboard"/>		AND ▾
Complete Specification ▾	<input type="text" value="e.g. shed"/>		AND ▾
Application Number ▾	<input type="text" value="e.g. 3285/CHENP/2008"/>		AND ▾
Patent Number ▾	<input type="text" value="e.g. 236542"/>		AND ▾
Applicant Name ▾	<input type="text" value="e.g. chris"/>		AND ▾
Inventor Name ▾	<input type="text" value="e.g. Singh"/>		AND ▾
Inventor Country ▾	<input type="text" value="e.g. IN"/>		AND ▾
Inventor Address ▾	<input type="text" value="e.g. Delhi"/>		AND ▾
Filing office ▾	<input type="text" value="e.g. Delhi"/>		AND ▾
Title ▾	<input type="text" value="e.g. FI10"/>		AND ▾
PCT Application Number ▾	<input type="text" value="e.g. PCT/US10/032937"/>		AND ▾
PCT Publication Number ▾	<input type="text" value="e.g. WO2010/127091"/>		AND ▾

Check to make sure at least
one field is filled out

2. Freedom to Operate (FTO) Search

Purpose: To assess whether a **product or process can be developed and marketed without infringing on existing patents**. This is crucial for companies looking to commercialize a new invention.

Process:

- Identify the **product or technology and relevant keywords**.
- Search for existing patents that might cover similar products or processes.

Example:

- **Scenario:** A startup is developing a new **wearable health monitoring device**.
- **Search:** The startup conducts an FTO search to identify patents that **might cover their device's features, such as heart rate monitoring or sleep tracking**.
- **Outcome:** Based on this information, the **startup can either redesign the device to avoid infringement or seek licenses** for the relevant patents.

3. Invalidity Search

Purpose: To find prior art that can challenge the **validity of an existing patent**.

Process:

- Search for **patents, articles, or other literature that predates** the patent in question and demonstrates that the invention was known or obvious.

Example:

- **Scenario:** A company wants to challenge a competitor's patent on a specific technology.
- **Search:** The **company conducts an invalidity search focusing on the technical aspects and keywords** in the competitor's patent.
- **Outcome:** The search uncovers a previously published research paper detailing the same technology, providing grounds to argue for the patent's invalidity.

4. Infringement Search

- **Purpose:** To determine whether a **new product or process infringes on existing patents.**
- **Process:**
 - Identify relevant patents that might cover the new product or process.
 - Analyze the claims of these patents in detail.
- **Example:** A startup developing a new smartphone app performs an infringement search to ensure **their technology does not violate existing patents related to mobile applications.**

6. State of the Art Search

- **Purpose:** **To gather information about the current technological landscape in a specific field, including trends and recent innovations.**
- **Process:**
 - Search for patents, research papers, and publications in a specific technology area.
- **Example:** A research institute conducts a state-of-the-art search on artificial intelligence to inform their R&D strategies and identify areas for potential innovation.

WIPO:

Understand & Learn ▾

Find & Explore ▴

Protect & Manage ▾

Partner & Collaborate ▾

About WIPO ▾

Patent & Technology Information

PATENTSCOPE

Patent Analytics

International Patent Classification

ARDI – Research for Innovation

ASPI – Specialized Patent Information

Plant Variety Information (UPOV)

PLUTO Plant Variety Database

GENIE Database

Trademark Information

Global Brand Database

Madrid Monitor

Article 6ter Express Database

Nice Classification

Vienna Classification

IP Laws, Treaties & Judgements

WIPO-Administered Treaties

WIPO Lex - IP Laws, Treaties & Judgments

Industrial Design Information

Global Design Database

International Designs Bulletin

Hague Express Database

Locarno Classification

IP Resources

WIPO Standards

IP Statistics

WIPO Pearl (Terminology)

WIPO Publications

Country IP Profiles

Geographical Indication Information

Lisbon Express Database

Global Brand Database for GIs

IP Reports

WIPO Technology Trends

Global Innovation Index

World Intellectual Property Report

PATENTSCOPE Advanced Search ▾

Please enter a search term

Search terms...

Simple

Advanced Search

Field Combination

Cross Lingual Expansion

Chemical compounds (login required)

USPTO:

← → ↺ 📄

ppubs.uspto.gov/pubwebapp/static/pages/ppubsbasic.html

☆ 📧 🌐 🏠 | D ⋮

OR

Basic search

Search

Everything ▾

For

Search

Everything ▾

For

Operator

AND ▾

Reset

Search

Formatting rules for searching are as follows:

1. One word per text box

2. If using the Patent/Application Publication number field, add leading zeros:

Before Patent Numbers with 6 digits or less to make 7 total digits
-ex: 123456 should be entered as 0123456
-ex: 12345 should be entered as 0012345

After the year to make 11 total digits for Application Publication numbers:
-ex: 2021123456 should be entered as 20210123456

3. If using Publication Date, the date format should be YYYYMMDD (e.g. 20221230)

Step-by-Step Patent Search Process via IPO (India Patent Search)

1. Define Search Requirements

- **Invention Characteristics:** Identify novel features.
- **Search Type:** Decide on novelty search, FTO search, etc.
- **Keywords and Classifications:** Prepare technical terms, keywords, IPC classifications.

2. Choose the Search Database: InPASS (Indian Patent Advanced Search System)

- Use InPASS for a comprehensive search.
- InPASS Patent Search

3. Conducting the Search on InPASS

- **Applicant/Assignee Search:** Name of individual or company.
- **Title/Abstract/Specification Search:** Relevant keywords and phrases.
- **Publication Date Search:** Define timeframe of interest.
- **Classification Search:** IPC classifications to identify specific technical areas.

InPASS Search Fields:

- **Application Number:** Specific application number.
- **Applicant Name:** Search by applicant/assignee name.
- **Title/Abstract/Claims:** Keyword search for titles, abstracts, claims.
- **Priority Date:** Search by priority dates.
- **Inventor Name:** Find patents by specific inventors.
- **Filing Office:** Narrow by patent office (Mumbai, Delhi, Kolkata, Chennai).

4. Analyze Search Results

- Important Sections in Patent Records:
 - Patent Number
 - Applicant and Inventor Names
 - Abstract
 - Claims
 - Filing Date
 - Legal Status

5. Refine and Filter the Search

- Add specific keywords/phrases.
- Use advanced operators (AND, OR, NOT).
- Focus on certain dates/classifications.

6. Download/View Full Patent Details

- Full Text Access: View/download full patent documents.
- Legal Status: Check if the patent is active or expired.

7. Analyze for Novelty or Infringement

- Novelty Analysis: Compare with existing patents.
- Infringement Risk: Review claims for potential infringement.

8. Review Examination Reports

- Access prosecution history and examiner reports.

Tools for Searching Patents at IPO (InPASS):

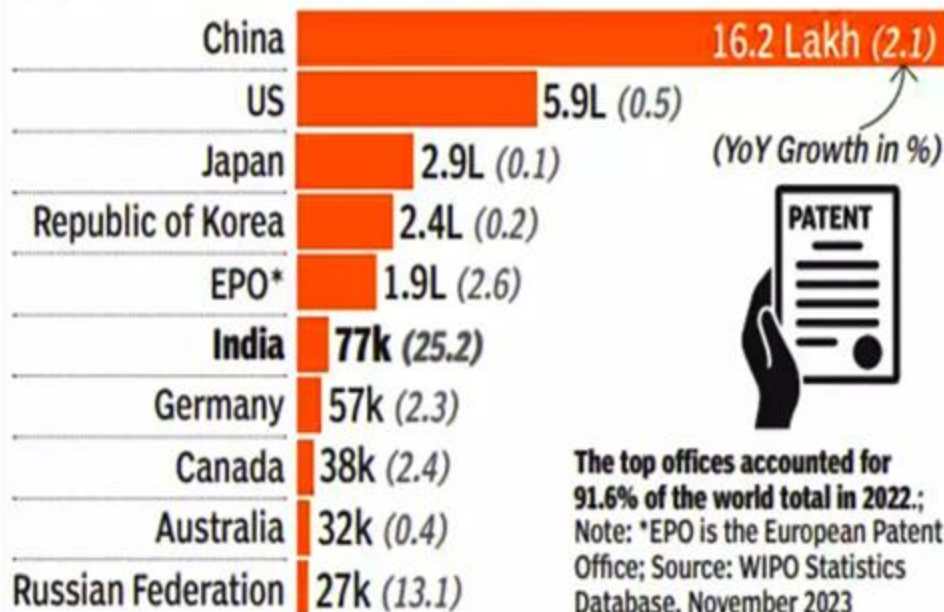
- Simple Search: Basic keyword/title search.
- Advanced Search: Multiple fields search (inventor, applicant, IPC, etc.).
- Patent E-register: Legal status of patents in India.
- Patent Classification Search (IPC): Domain-specific search.

Example: Patent Search Process for a New AI Algorithm

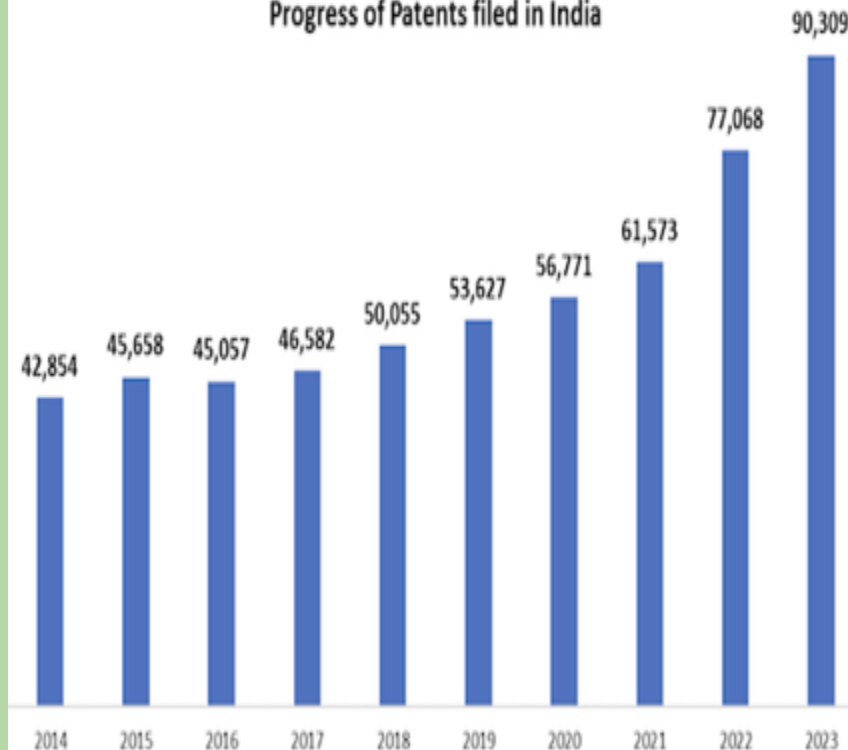
Patent Analysis

Indian, Chinese Innovators Fuel Growth

Applications received in IP offices of different nations in 2022



Progress of Patents filed in India



Patent Filings Over Time

- **Trend:** The Government of India's "**Make in India**" and "**Startup India**" initiatives have contributed to this growth. The number of patent applications filed in India reached over **66,000 in FY 2022**, showing a significant increase compared to earlier years.
- **Example: WIPO Report on Patent Filings**
India ranked **7th globally in terms of the number of patent filings in 2021**. Companies like **Tata Consultancy Services (TCS), Wipro, and Reliance Industries** are among the leading Indian patent filers, with significant contributions in software, telecommunications, and energy sectors.

2.Geographical Distribution

- **Trend:** Patent filings in India are concentrated in certain regions, particularly in states with major industrial hubs and research institutions. **Maharashtra, Karnataka, Delhi, Tamil Nadu, and Gujarat are the leading states in terms of patent filings.**
- **Example: Karnataka's Role in Tech Patents**
Karnataka, home to the tech capital of India, Bengaluru, is a significant contributor to patent filings, particularly in IT, telecommunications, and biotechnology. The presence of large tech companies like Infosys and Wipro, along with global R&D centers of companies like IBM and Microsoft, has boosted patent activity in the region.

3.Industry-Specific Patent Trends

- **Trend:** The distribution of patent filings across industries in India shows a concentration in sectors such as **pharmaceuticals, IT, electronics, and biotechnology**. Pharmaceuticals remain a dominant sector due to India's robust generic drug manufacturing industry.
- **Example: Pharmaceutical Patents – Sun Pharma**
Sun Pharmaceutical Industries, **one of India's largest pharmaceutical companies, has consistently been among the top patent filers in the pharmaceutical sector**. In 2022, Sun Pharma filed patents related to novel drug delivery systems for cancer and chronic diseases.
- **Example: IT and Telecommunications – TCS**
Tata Consultancy Services (TCS), a global IT services provider, filed over **600 patents** in 2021, primarily in software, AI, machine learning, and telecommunications technologies.

4.Foreign vs. Domestic Filings

- **Trend:** India has a significant proportion of patent filings from foreign entities, primarily multinational corporations (MNCs) seeking to protect their innovations in the Indian market. However, domestic patent filings have also been rising due to increased innovation by Indian companies and startups.
- **Example: Philips India Patent Filings**
Philips India, a subsidiary of the global healthcare and consumer electronics company, has consistently been among the top patent filers in the country. The company files patents in areas such as medical imaging, healthcare devices, and consumer electronics.

5.University and Research Institution Patents

- **Trend:** Government initiatives like the “Atal Innovation Mission” and "University-Industry Collaboration" have fostered academic contributions to patent activity.
- **Example: Indian Institute of Technology (IIT) Patents**

The Indian Institutes of Technology (IITs) are among the top academic patent filers in India. IIT Delhi, IIT Bombay, and IIT Madras lead in filing patents across a wide range of fields, including nanotechnology, materials science, electronics, and renewable energy. In 2021, IIT Delhi filed patents related to COVID-19 innovations, including diagnostic kits and ventilator designs.

6. Innovation in Startups

- **Trend:** Indian startups, particularly in sectors like **fintech, healthcare, and deep tech**, have **become key players in patent filings**. Government initiatives like the **Startup India** program have provided financial and legal support for patent filing by startups, helping them protect their innovations.
- **Example: Ola Electric Patents**
Ola Electric, a startup focused on electric mobility, has filed patents related to **battery management systems and electric vehicle (EV) technologies**.
- **Example: CureFit's HealthTech Patents**
CureFit, a health and wellness startup, has filed patents in the areas of **AI-driven fitness and wellness technologies, including innovations in health monitoring and personalized fitness plans**.

Strategies for Protecting Intellectual Property

1. Patent Protection

Strategy: Patents protect inventions that are novel, non-obvious, and useful. In India, Indian Patent Office.

Steps:



- Conduct a **patent search to ensure the invention is novel**.
- **File a patent application with a detailed specification** (provisional or complete).
- **After scrutiny and examination** by the patent office, the patent is granted.
- **A patent in India is valid for 20 years** from the filing date.

Example: Pharmaceutical company **Sun Pharma** files a **patent for a new drug molecule** used in the **treatment of diabetes**. After receiving the patent, no other company can make, use, or sell the drug in India without Sun Pharma's permission.

2. Trademark Protection



Strategy: Trademarks protect brand **identity, including names, logos, and slogans.**

Steps:

- **Conduct a trademark search** to ensure the mark is not already registered.
- **File the application** for trademark registration.
- **After examination and publication**, if there are no objections, the trademark is registered.
- **Trademarks can be renewed** indefinitely every 10 years.

Example: *Tata Group* registers the trademark for its logo, ensuring that no other company can use a similar design that may confuse consumers. If a competitor tries to use a similar logo, Tata can sue for infringement.

3. Copyright Protection

Strategy: Copyright arises automatically once the work is created, but registration provides additional legal protection.



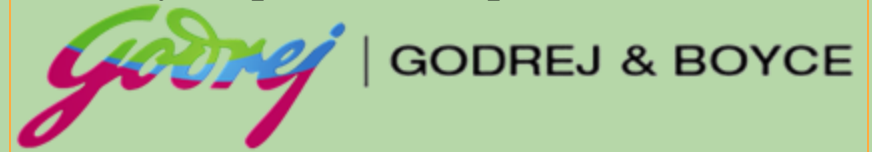
Steps:

- Create the original work (e.g., a book, software code, or music).
- Although copyright protection is automatic, creators can register their work with the Copyright Office in India for additional evidence of ownership.
- Copyright lasts for the lifetime of the author plus 60 years.

Example: T-Series is India's largest music label and film production company, owning copyrights to a vast catalog of music albums, film songs, and soundtracks. T-Series registers the copyrights for its music and audiovisual works with the Indian Copyright Office. This protects them from unauthorized use, including illegal copying, distribution, and performance..

4. Design Protection

Strategy: Industrial design registration protects the **shape, configuration, pattern, or ornamentation** applied to an article. This is particularly important for products where the **appearance influences consumer choice**.



Steps:

- **File an application** for design registration with the **Design Wing of the Patent Office**.
- The design must be **new or original** and should not have been published in any country before filing.
- Once registered, the design is **protected for 10 years**, with a possible extension for another 5 years.

Example: *Godrej & Boyce* registers the design of a **new line of refrigerators with a unique external look**. No other company can replicate this design without violating their design

5. Trade Secret Protection

Strategy: In India, trade secrets are **not protected by specific laws** but **through contracts and legal agreements**.



Steps:

- Use **non-disclosure agreements (NDAs)** with employees, partners, and contractors to protect confidential information.
- Implement **security measures** to prevent unauthorized access to trade secrets.

Example: **Amul** uses a proprietary method for making its **dairy products**, and **this process is kept confidential within the organization**. Employees working in relevant areas sign NDAs, ensuring that trade secrets are not leaked to competitors.

6. Geographical Indication (GI)

Strategy: GI protection is used for products that have a specific geographical origin and possess qualities, reputation, or characteristics inherent to that location.



Steps:

- File an application for GI registration with the GI Registry.
- The product must have a specific link to the geographical area (e.g., agricultural products, handicrafts).
- Once registered, the GI is protected indefinitely with periodic renewals.

Example: *Darjeeling Tea* is a registered GI in India. Only tea grown and processed in the Darjeeling region of West Bengal can be sold as “Darjeeling Tea.” This ensures authenticity and prevents misuse of the name by non-local producers.

Ethical Considerations in Technology and Innovation

- ❑ Ethical considerations in technology and innovation focus on balancing technological advancement with societal, environmental, and individual rights.
- ❑ These considerations ensure that the development, deployment, and use of new technologies do not harm individuals or communities and align with moral values.
- ❑ Some key ethical concerns include privacy, fairness, accountability, transparency, security, and societal impact.

1. Data Privacy and Ownership

2. Bias and Fairness in Artificial Intelligence (AI)

3. Autonomy and Accountability in Autonomous Systems

4.Environmental Sustainability

5.Misinformation and Manipulation through Technology

1. Data Privacy and Ownership

- **Overview:** The widespread use of **digital platforms and mobile applications** in India has led to the collection of **vast amounts of personal data**.
- **Example: Aadhaar Data Privacy Issues**

Aadhaar, **India's national biometric identity system**, has been at the center of privacy debates. Data breaches, unauthorized access, and potential misuse of personal data. In **2018, the Indian Supreme Court ruled** that privacy is a fundamental right, putting restrictions on how Aadhaar data can be used.
- **Ethical Concern:** The need for **robust data protection laws** (like the Personal Data Protection Bill) and mechanisms to safeguard personal data is critical.

2. Bias and Fairness in Artificial Intelligence (AI)

- **Overview:** AI technologies are being increasingly adopted in India in sectors like healthcare, education, and finance. However, AI systems trained on biased or unrepresentative data can produce unfair outcomes, especially in a diverse country like India with vast socio-economic and cultural differences.
- **Example: Bias in AI-Based Loan Approvals**

Several fintech companies in India use AI to assess creditworthiness and approve loans. However, these AI systems often rely on historical data that may be biased against low-income or minority groups, perpetuating financial exclusion.
- **Ethical Concern:** Developers must address bias in AI systems and ensure that the technology promotes fairness and equality in access to financial services.

3. Autonomy and Accountability in Autonomous Systems

- **Overview:** As India moves towards the adoption of autonomous systems, including **drones and self-driving vehicles**, **questions about accountability** in case of accidents or system failures become prominent.
- **Example: Use of Drones for Surveillance and Agriculture:** Drones for surveillance, agriculture monitoring, and disaster management. However, **ethical issues around privacy, data security, and the accountability** of these autonomous systems in case of errors are significant.
- **Ethical Concern:** Who is accountable for autonomous systems when they **malfunction or cause harm**? Should **responsibility lie with the manufacturer, the operator, or the government**? **Clear legal frameworks are required** to define liability and ensure that autonomous technologies are safely integrated into society.

4.Environmental Sustainability

- **Overview:** With the increasing use of technology in industries like manufacturing, transportation, and energy, India faces challenges related to environmental sustainability. Ethical concerns arise around the ecological impact of technological development, including e-waste, energy consumption, and pollution.
- **Example: E-Waste Management in India**
India is one of the largest producers of e-waste globally, but the country struggles with inadequate recycling infrastructure. The improper disposal of electronic devices leads to environmental pollution and health hazards for informal workers who dismantle e-waste without safety measures.
- **Ethical Concern:** Technology companies must adopt environmentally sustainable practices, such as promoting recycling, reducing e-waste, and using eco-friendly materials. Government regulations should also ensure responsible disposal and recycling of electronic products.

5.Misinformation and Manipulation through Technology

- **Overview:** The rapid spread of misinformation through digital platforms has become a major ethical issue in India, especially during political campaigns, health crises, and communal tensions. Social media and messaging apps can quickly disseminate false information, leading to real-world consequences like violence or political unrest.
- **Example: WhatsApp Misinformation and Lynching Incidents**
In 2018, several lynching incidents occurred in India due to the spread of false rumors on WhatsApp about child kidnappers.
- **Ethical Concern:** Platforms like WhatsApp and Facebook must take stronger measures to combat misinformation, such as implementing fact-checking systems, limiting the forwarding of messages, and working with local authorities to address the societal impact of false information.

Thank You