

Structure

In this chapter, we will discuss the following topics:

- Explore the emergence of Artificial Intelligence (AI) enabled jobs in various fields and their impact on acquisition of skills required for these jobs.
- Formulate a summary of findings of local examples of AI applications using the Research template.
- List awareness points about AI bias and AI access along with the potential ethical concerns of AI.
- Design a poster to summarize the skill sets required for AI-ready future jobs.

Artificial Intelligence plays a very active role in our daily lives ranging from:

- Checking our schedules
- Looking for directions
- Getting music and movie recommendations by digital assistants and chatbots on our hand-held devices

User preferences are deduced by data analysis done over time which are quite evident when exploring social media. The latest edition to this list is the successful launch of self-driving cars and parking assistance available in modern cars.

Objectives

At the end of this chapter, you should be able to:

- Describe how AI has been affecting jobs in various industries.
- Paraphrase theme-based research of various local case studies.
- Showcase and illustrate local case studies of people using AI for good or working in the AI field.
- Identify and gain awareness on the skill sets needed for jobs in the AI field.
- Hone communication and collaborative skills while learning how to design activities.



Figure 4.1 AI in our daily lives

Successful launch of self-driving cars and parking assistance available in modern cars.

Smart email replies available assist in quick communication. Smart search on a web browser is based on the user data collected such as location, age, and other personal preferences, which aids AI to assist the search engine in predicting what the user is looking for.



Figure 4.2: Fiction vs reality

Online purchases and travel bookings are other examples which are influenced with AI algorithms working in the background for user suggestions. The fictional stories of the past are now becoming a reality of our daily lives.

Activity 4.1: Let us explore a few areas where Artificial Intelligence plays a major role. Mention a few examples observed by you in the following domains in the world around us.

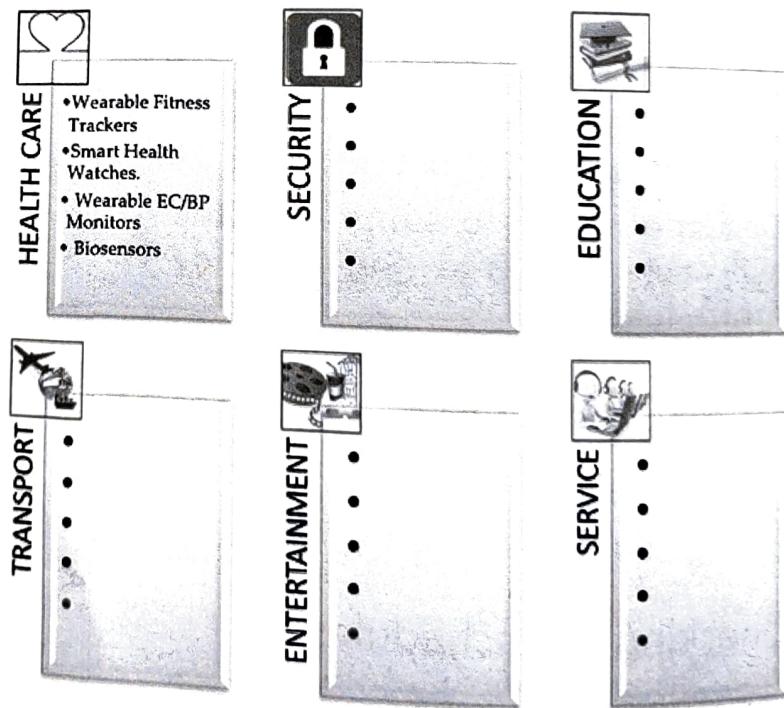


Figure 4.3: AI in our daily lives

Research Template

Before we proceed towards understanding the themes more deeply, let us ponder over certain skill sets, research, and communication, which are crucial for understanding Artificial Intelligence in its true sense. We shall study and compose data using the research template explained later in the chapter to deduce our interpretations.

Research skills attribute to suggesting new ideas and help comprehend the topic better. You can research using multiple methods like the internet, articles, studies, surveys, interviews, books, journals, experiments, and personal experiences. These skills further help you with data collection, critically analyzing information from different sources as well as finding information on the internet, planning and scheduling, interviewing, and report writing.

Communication skills enhance your ability to accept and relay different kinds of information. These skills constructively involve observing, empathizing, adapting, listening and speaking to build verbal, visual, and written communication.

Activity 4.2: Let us explore one of the themes such as Health care in detail and observe how AI is making an influence in the field with new technological advancements.

1. Step 1: Watch the video link to understand how AI has made itself an indispensable component of Health care in today's times. Video link: <https://youtu.be/H0etieBDxeY>

2. Step 2: Watch the following three case studies where AI has made a major contribution in the Health care sector in India.

Video Link 1: <https://youtu.be/nTnCDkYYouY>

Video Link 2: <https://youtu.be/savHgQntSQk>

Video Link 3: <https://youtu.be/BDOXP63XjuY>

3. Step 3: Make entries in the Research Template as follows to gather the observations post watching the videos mentioned above.

Industry Theme: Health care

- AI is augmenting human beings and machines to work collaboratively to change the face of the Health Care industry.
- AI has permeated various areas of Health care and probable futuristic applications to aid in saving human lives.
- AI is an ever-growing hub of technologies that allow smart machines to broaden human capabilities and allow achieving more than they would have without the machines.
- AI enabled smart machines can listen, understand, learn, and perform administrative and clinical health care systems.
- Certain aspects of AI may create inhibitions among its users.
- Healthcare AI is being implemented mainly in operational areas.

- There is an improvement in analytical capabilities of the Health Care model in areas such as patient identification and personalized treatment and management.
- The new systems are providing cost effective savings, (for example, appointments, financial treatment, and management)
- There is an expanded patient reach serving broader population through digital tools.

4. Step 4: Mention the local start-ups or people working in the sectors using AI as per your theme.

| What are the names of the organizations in our country working around this theme? | Write briefly what they do. |
|--|---|
| Zebra Medical Vision and Apollo Hospitals Transform India's Healthcare | They are pioneering AI in medical imaging to enhance tools for radiologists to scan detect and mitigate to provide an all-in-one solution, including triage bone health oncology and cardiology. Apollo Hospitals are fully integrated with AI algorithms from Zebra-Med to help transform health care. |
| Google AI powered eye-care technologies at Aravind and Sankara eye Hospitals, Chennai, Tamilnadu | Google's AI has been using machine learning algorithms for diagnosing diabetic retinopathy. The same retinal scans are now being used for predicting the risks of having adverse cardiovascular events. They are bringing medical care to areas in interior India, where even the doctors are scarce. |
| Targeted Real-Time Early Warning Score (TREWS) developed by Machine Learning and Health Lab at Johns Hopkins University Narayana Health City | The concept has been using Machine learning to saving lives by going through a volume of patients' data and comparing them to one patient's health data to detect symptoms 12 to 24 hours sooner than a doctor could. |
| Qure.ai Sigtuple CureSkin | They have set up an in-house vertical data analytics centre using Microsoft AI for providing solutions from staff forecasting to enhancing prediction of diagnostic lab operations from volumes of patient datasets. Pathology Dermatology Solutions |

| | |
|---|---|
| | <ul style="list-style-type: none"> • Strong understanding of business administration and operations • Basic understanding of medicine and patient care • Financial software for planning and budgeting • Data analysis • Devising plans for maintaining Quality control standards online reviews |
| Soft Skills (10 years later) | Technical Skills (10 years later) |
| <ul style="list-style-type: none"> • Communication • Team work • Work ethics • Adaptability/ Flexibility • Interpersonal skills • Critical observation • Conflict resolution • Leadership skills • Problem solving | <ul style="list-style-type: none"> • Data analysis • Engineering and designers working with 3D printing • Research • Telemedicine • VR Technology experts • Machine Learning programmers • Using ICT to handle AI-enabled machines |

6. Step 6: Mention the ethical concerns revolving around the theme.

Topic

- Cyber Security
- Explaining the boundaries between the physician's and machine's role in patient care
- Preparing future physicians for a career integrating AI
- Legal issues

Examples

- Added risk to patient privacy and confidentiality
- User technical expertise in interpreting AI-guided diagnostic test results
- Use of an Artificially intelligent robot during surgery
- Medical malpractice and product liability

7. Step 7: Mention the sources and provide web links.

- <https://www.hospitalhealth.com.au/content/technology/article/enabling-health-care-with-Artificial-Intelligence-423078316#axzz63fKkA71z>
- <https://www.hospitalhealth.com.au/content/technology/article/how-embracing-technology-can-make-life-easier-for-the-healthcare-sector-1163316087#axzz63fKkA71z>
- [https://www.webmd.com/a-to-z-guides/features\(Artificial-Intelligence-helps-health-care#1](https://www.webmd.com/a-to-z-guides/features(Artificial-Intelligence-helps-health-care#1)
- <https://www.pwc.com/gx/en/industries/healthcare/publications/ai-robotics-new-health/transforming-healthcare.html>
- <https://www.globenewswire.com/news-release/2019/10/28/1936480/0/en/care-ai-Collaborates-with-NVIDIA-to-Pioneer-Artificial-Intelligence-enabled-Autonomous-Patient-Monitoring-in-Healthcare.html>
- <https://www.healtheuropa.eu/personalised-cancer-treatment/87958/>
- <https://www.forbes.com/sites/greglicholai/2019/10/27/ai-needed/#4c5b19d74817>
- <https://www.healthcarefinancenews.com/news/why-Artificial-Intelligence-wont-replace-doctors>
- <https://www.businessinsider.com/Artificial-Intelligence-healthcare?IR=T>
- <https://bmjleader.bmj.com/content/2/2/59.full>
- <https://bdtechtalks.com/2019/07/30/Artificial-Intelligence-health-care-trends/>
- <https://www.thebalancecareers.com/Artificial-Intelligence-is-changing-your-career-in-medicine-4586781>
- <https://factordaily.com/ai-for-healthcare-in-india/>

The steps mentioned in the preceding practice activity can be one of the interpretations of the theme. However, you can summarize your observations as per your selected theme in the Research template.

Activity 4.3: This is a 4-pair activity. You can make a 4 student group pair and attempt this activity. Divide your roles accordingly. You have to delve deeper and fill the research template with your observations, keeping any of the following themes in mind.

Research Template

Industry Theme

What are the names of the organizations in our country working around this theme?

Write briefly what they do.

Mention the skills sets required for the job sector as per your theme. Do elaborate on the set of skills (soft skills and technical skills) that would be expected of new hires, today, and after ten years.

| Soft Skills | Technical Skills |
|------------------------------|-----------------------------------|
| Soft Skills (10 years later) | Technical Skills (10 years later) |

Mention the ethical concerns revolving around the theme.

| Topic | Examples |
|-------|----------|
| | |

Cite the sources and provide web links.

Poster making: Future Job Advertisement

A poster is a communication medium to present or promote an idea/theme to an audience. The focus is on the main idea and has to be presented in such a manner that it talks about the topic clearly by itself.

When we need to create a poster for future-ready AI jobs' advertisement, then it must have certain key elements in it. The key elements of the poster for such an advertisement are as follows:

- Title of the advertisement (Job designation)
- Short description about the company
- Number of vacancies and the post should be clearly mentioned
- Age and gender for the suitable post
- Location
- Remuneration
- Qualification: Educational, Technical and Professional experience
- Mode of communication
- Contact details

Activity 4.4: Let us continue with our theme Health Care as discussed in the previous section of this chapter and use the observations compiled in the research template. Now, let us design one advertisement for the same theme. Say, for example, I need to create the advertisement for an X-Ray Technician for my company ABC Hospitals.

To create a poster, first of all let us put the data in all elements as in the following table to make an effective job advertisement:

| | |
|---|---|
| Title of the Advertisement includes the job designation | Radiographer, X-Ray Assistant |
| Short description about the company | ABC Hospitals has announced vacancy for X-Ray Technician urgently |
| Number of vacancies and the post should be clearly mentioned for which it is advertised | 1 |
| Gender for the suitable post | Male |
| Location, that is, the state in which it is required | Chennai |
| Salary | 25000 INR |

| | |
|---|---|
| Educational Qualification and experience (if any) needed for the post | Graduation with minimum 2 years of experience |
| Mode of applying (Email, postal, and so on) | Email: hr@abchospitals.co.in |
| Contact address and phone number for correspondence | ABC Hospitals, Chennai Contact: 1111111111 |

Once you have the values for the key elements, then you just need to put them in a presentable form in a box. Let us script the data mentioned in the tabular form to see how the above data can be presented in the form of a poster for job advertisement.

Required X-Ray Technician

ABC Hospitals has announced vacancy for X-Ray Technician urgently who is good at communication skills, medical, and anatomical skills and mechanical aptitude.

| | | |
|--|---|---|
| Total Posts | : | 1 |
| Gender | : | Male |
| Location | : | Chennai |
| Salary | : | 25000 INR |
| Educational Qualification and Experience | : | BS in Radiology program Minimum 2 years of work experience |
| Email your resume at | : | hr@abchospitals.co.in |
| Contact | : | ABC Hospitals, Chennai ① #1111111111 |

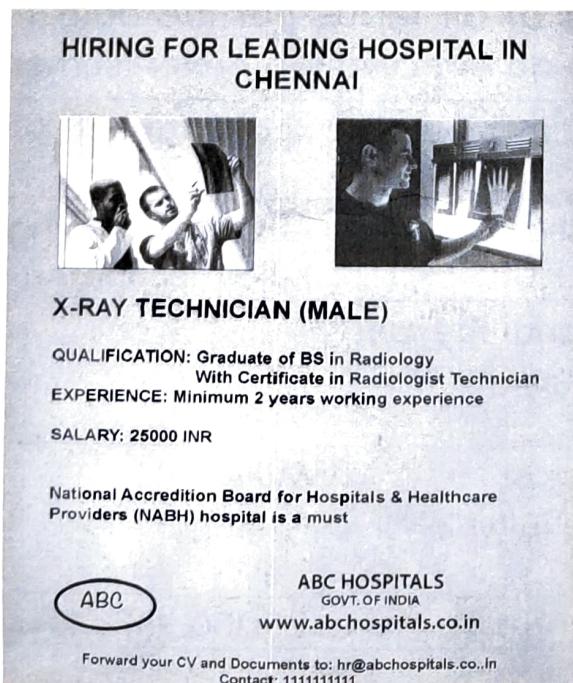


Figure 4.4: Job Advertisement exemplar (today)

Now as we have studied about the soft skills and technical skills that shall be required for the same job in the next 10 years, let us chalk out the soft skills and technical skills of the X-Ray technician which we need in our company.

soft skills:

- Communication skills
- Team work
- Leadership skills
- Adaptability

Technical skills:

- Analytical
- Analyzing the equipment problems
- Calibrating and maintaining AI-enabled radiology equipment
- Medical and anatomical skills
- Data analysis
- Machine learning



Figure 4.5: Job Advertisement exemplar
(10 years from today)

Activity 4.5: Design a job advertisement for a professional from the theme selected by you depicting the skills required after 10 years from now. To create this advertisement, you need to search for current and emerging trends in this field and then create an effective advertisement.

Activity 4.6: Mention the soft skills and technical skills needed for the above advertisement.

| Soft Skills | Technical Skills |
|-------------|------------------|
| | |

Points to Remember

- AI plays a very active role in our daily lives by digital assistants and chatbots on our hand-held devices.
- User preferences are deduced by data analysis which is done over time and that can be seen in social media.
- Smart search on web browser is also based on the user collected data by the AI assistance using data analysis.
- AI algorithms are working in the background all the time for suggesting online purchases and bookings.
- Health Care, Security, Education, Transport, and Entertainment and Service are the main domains/themes for which AI is playing a major role.
- Research is a skill which is used to get new ideas based and help comprehend the topic better. This can be done using various methods like newspapers, journals, internet, books, surveys, interviews, and so on.
- Research skill helps to collect data and critically analyze information from different sources.
- Communication skills enhance your ability to accept and relay different kinds of information.
- Communication skills involve observing, empathizing, adapting, listening and speaking to build verbal, visual, and written communication.

- AI is augmenting human beings and machines to work collaboratively to change the face of any kind of industry.
- AI is an ever-growing hub of technologies that allow smart machines to broaden human capabilities and to achieve more and accurate results in less time.
- AI enabled smart machines can listen, understand, learn, and perform administrative tasks.
- Soft skills are the attributes that are used to effectively interact with one another. Some of the soft skills are leadership skills, teamwork, communication skills, problem solving skills, interpersonal skills, and so on.
- Technical skills are the attributes and knowledge required to perform a particular task. Some of the technical skills are Project Management, Data Analysis, Designer, Writer, Financial Planning, and so on.
- Poster is a type of communication to present or promote something to an audience.

Exercise



Multiple Choice Questions:

- Which of the following is not applicable for smart email replies?
 - Save time
 - Time consuming
 - Quick communication
 - Automated short email responses
- Google AI powered eye-care technologies at Aravind and Sankara eye Hospitals, Chennai, Tamilnadu is working for/as:
 - Dermatology solutions
 - Breast cancer detection
 - Pathology
 - Diagnosing diabetic retinopathy
- Sigtuple organization:
 - Have developed cloud-connected ECG devices which detect heart anomalies
 - Pathology
 - Breast cancer detection
 - Dermatology solutions
- Which one of the following is not a soft skill?
 - Work ethics
 - Communication skills
 - Data analysis
 - Interpersonal skills
- TREWS stand for:
 - Training Range Electronic Welfare Simulators
 - Targeted Real-Time Early Warning Score

- c. The Really Educated Work Systematically
- d. The Radio Electronic Welfare Simulator



PRACTICE QUESTIONS

I. Fill in the blanks:

- a. User preferences are deduced by _____ done over time and can be seen in social media.
- b. Artificial Intelligence _____ are working in the background for suggesting online purchases and _____.
- c. Smart search is a technique on web browser which is collecting user data by the AI assistance using _____,
- d. Research skill helps to collect _____ and critically analyze information from different _____.
- e. _____ skills enhance your ability to accept and relay different kinds of information.
- f. Artificial enabled smart machines can _____, understand, _____ and perform administrative tasks.
- g. Poster is a type of _____ to present or promote something to an audience.
- h. _____ are exploring medical imaging space.
- i. _____ have developed cloud-connected ECG devices which detect heart anomalies.

II. Match the following:

- | | |
|------------------------|--|
| a. Soft Skill | i. Data analysis |
| b. Smart Search on web | ii. Speaking |
| c. Technical Skill | iii. Chatbot |
| d. Communication Skill | iv. Project management |
| e. Digital assistant | v. Collect data and critically analyze from different sources. |
| f. Niramai | vi. Dermatology solutions |
| g. Cure Skin | vii. Teamwork |
| h. Research Skill | viii. Breast cancer detection |

Write any three themes for which Artificial Intelligence is playing a major role.

Scramble the following letters to form a word:

IKSLL

ACEESHRR

Write any three soft skills and technical skills.

Give any two examples from your life where you have observed that AI is helping you.

Explain smart search on web with the help of an example.

Give any two examples of AI helping in the field of education.

Write the key elements needed to design a poster for job advertisement.

Write the functionality of the following organizations regarding AI:

- Google AI
- Narayana Health City