

# Emerging Trends and Technologies used in Artificial Intelligence

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**Abstract**— Artificial Intelligence is Like Human intelligence in machine which programmed to think like humans and mimic their action. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving. An Artificial Intelligence based on data mining model that helps firms to detect emerging topic and trends. In this paper our Aim is to find the latest Emerging technology for Artificial Intelligence. In this paper we consist the component for query processing, data collection, data preprocessing, topic modelling, topic analysis and visualization.

**Keywords:** Artificial Intelligence, Machine Learning, Strategic Decision Making, Technology Management, Trend Detection

## I. INTRODUCTION

Artificial Intelligence has change the way we live with innovation technologies. The term artificial intelligence first introduce in 1956 at a conference. According to the Gartner report artificial intelligence adopt has grown from 4% to 15% during 2018-19. Multiple new emerging technologies are embedded. Start-ups to gigantic organization are in rat race to implements artificial intelligence for operational excellence, data mining, etc.

Latest Artificial Technologies:

- Decision management
- Machine learning
- Deep learning platforms
- Biometrics

### A. Decision management:

Modern organization are implementing decision management system for data conversion and interpretation into predictive models. Decision management helps in making quick decisions avoidances of risks, and in the automation of the process.

### B. Machine Learning:

Machine learning is division of artificial intelligence. Machine learning technic helps businesses to make inform decisions with data analytics performed using algorithms and statistical models.

### C. Deep learning platforms:

Deep learning is another branch of artificial intelligence that functions based on artificial neural network. A neural network as 2-3 hidden layers and can have a maximum of 150 hidden layers.

### D. Biometrics:

Physical biometrics solutions use distinctive and measurable characteristics of the human body and transform this information code understandable by the artificial intelligence.

This Paper is structured as follows: Section II covers the related work. Section III and IV talks about research method and Approaches. Section V describes the implementation used in this Paper. Section VI covers the case study. Section VIII describes the conclusion. The last section discuss important findings in our research.

## II. RELATED WORK

In this section of IEEE paper, we review some previous work related to the Artificial intelligence emerging and trends technologies. The Literature's have proposed different techniques of Artificial intelligence.

- 1) Apoorva R, Deekshitha Arasa, Shriyanka Jamadade: This paper intends to study the techniques developed in artificial intelligence (AI) from the standpoint of their applications in all fields related to engineering. This paper highlights a comparative study between approaches and its applications.
- 2) M. Amirtha Krishnan, C. Gowri Shankar, R. Venkatesh: In this paper they use big data, hadoop is a kind of Internet-based computing that provides shared processing resources and data to computers and other devices on-demand.
- 3) Amaan Anwar & Syed Imtiyaz Hassan: In this paper Cyber security, Artificial Intelligence (AI), Security intelligence, Cyber defense, Denial of Service (DoS), Self-Organizing Maps (SOM) this kind of technique are used.

## III. RESEARCH METHOD

In this section we discuss about Research Method of Artificial Intelligence.

### A. Artificial Neural Network:

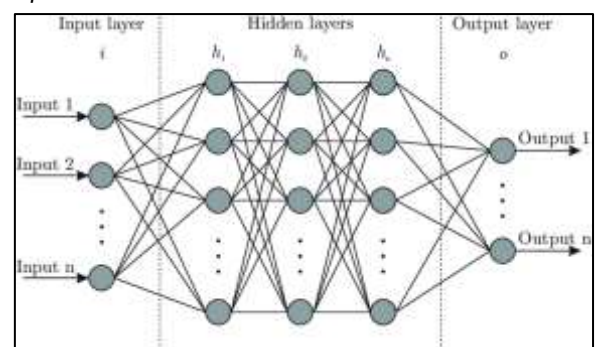


Fig. 1: Artificial Neural Network

Artificial neural networks are used for modelling non-linear problems and to predict the output values for given input parameters from there training values. Artificial neural network receives the input signal from the external world in the form of a pattern and image in the form of a vector the input are mathematically designated by the notations  $x(n)$  for every  $n$  numbers of input. Each of the input is then multiplied

by its corresponding weights (these weight are the details used by the artificial neural networks to solve the certain problems).

1) *Input Layer:*

The input layer contain those artificial neurons (termed as units) which are to receive input from the outside world. This is where the actual learning on the network happens, or recognition happens else it will process.

2) *Output Layer:*

The output layers contain unit that respond to the information that is fed into the system and also where it learned any task or not.

3) *Hidden Layer:*

The hidden layers are mentioned hidden in between input layer and output layers. The only job of hidden layer is to transform the input into something meaningful that the output layer/unit in some way.

B. *Genetic Algorithms:*

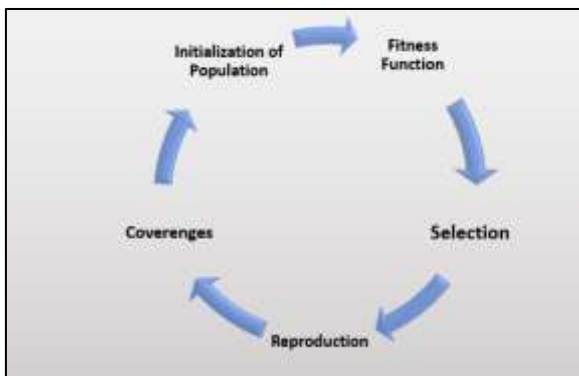


Fig. 2: Genetic Algorithms

Genetic Algorithm is majorly used for two purpose:

- 1) Search
- 2) Optimization

Genetic Algorithms use as iterative process arrive at the best solution.

The process can be broadly divided as following:

1) *Initialization:*

Randomly generate a population with multiple solutions. Gene is the smallest unit and can be referred to as a set of characteristics. We aim to join the genes to obtain the solutions. The solution itself represents one candidate solution abstractly. The generation of solution is user defined.

2) *Defining the fit function:*

Now we need to define the evaluation criteria for best solutions. Each solution is assigned with a fitness score by the goodness of the solution.

3) *Selection:*

Selecting the top 2 fittest solutions for creating the next generation. These will act as parents to generate offspring for the next generation which will naturally inherit the strong features.

4) *Crossover:*

Crossover is the equivalent of two parents having a child. Each solution contributes a certain number of genes to the new individual. Offspring are created by exchanging the genes of parents among themselves until the crossover point is reached.

5) *Mutation:*

To avoid the duplicity (crossover generates offspring similar to parents) and to enhance the diversity in offspring we perform mutation. The mutation operator solve this problem by changing the value of some features in the offspring at random.

IV. APPROACH TO SPOTTING EMERGING TOPICS AND TRENDS

Our purposed model is based on the existing concepts from artificial intelligence as well as existing approaches from advanced machine learning. Components of our model are described in following sections:

A. *Query Generation:*

In order to improve the quality of search and thus the quality of the data collected, we have added the component for query expansion to our model. Here by, human expert created search query is extended by synonyms and semantically related terms from the web base semantic knowledge graph concept net.

B. *Data Collection:*

In this data collection, the final search query is automatically translated into the query language of each database for the data source types selected by the human expert.

C. *Data Preprocessing:*

Data preprocessing is a data mining technique that involves transforming raw data into an understandable format. Real-world data is often incomplete, inconsistent, and/or lacking in certain behaviors or trends, and is likely to contain many errors. Data preprocessing is a proven method of resolving such issues.

D. *Topic Modelling:*

Topic modeling is a method in natural language processing (NLP). It is used to train machine learning models. It refers to the process of logically selecting words that belong to a certain topic from within a document.

V. IMPLEMENTATION

The languages are known to come in ours studies which are python, big data, machine learning, deep learning. From this languages the human workload has become very easy. In this paper we have use this languages. In python approach we make the use of libraries, Numpy, Pandas. Using this python approach our coding process and are time management has become very easy.

By using big data our project work has been divided in small ways and by this our work and compilation of our project has become very easy and through this process we get confident about are project because dividing this project in small ways has done are project excellent without any error.

And at last using Machine learning the development of computer system that are able to learn and adopt without following explicit instructions by using algorithms and statistical models to analyze and draw inferences from the patterns in data.

## VI. CASE STUDY

### A. This Google-Funded Company Uses Artificial Intelligence to Fight against Fake News

"Falsehood flies, and the truth comes limping after it," wrote Jonathan Swift over 200 years ago. If that was the case back then, before telephones and radio, let alone Twitter and Instagram, imagine how much bigger the problem is now. In fact, it's so big that "fake news" has become a hot topic for those on both sides of the political spectrum. Gartner has gone as far as predicting that by 2022, we will consume more lies than truth. But if technology has exacerbated the situation, there's hope that it may also offer remedies. In particular, artificial intelligence – in its most useful current form, machine learning – can potentially be a powerful tool for sorting truth from fiction. Machine learning is already being used by banks and financial institutions to comb through records of financial transactions, looking for tell-tale signs of errors or fraud, and then using that data to become more efficient – effectively "learning" without human input. In the same way, algorithms can be trained to monitor media – across both social networks and news organizations – looking for tell-tale signs that any piece of output might be out of alignment with whatever objective truths are known regarding situations or events. One exciting application of this technology comes from Belgium-based startup VeriFlix. They have developed a method of scanning user-submitted videos – which play an increasingly significant part in the output of most media organisations – and attempting to determine whether they actually are what they purport to be. After winning funding through Google's Digital News Initiative, the company's technology is now being put to use by one of that country's largest media outlets – Rourlarta, with promising results. Founder Donald Star talked to me about how the platform had evolved from its initial conception as a peer-to-peer crowdsourcing app for videos. Media organisations would make a request for video footage through the app, and any user within the correct relocation could switch on their phone and start filming. "Once the videos get sent to the platform we add a layer which first detects the content of every stream – so we can say what we see in the video, alongside the relocation data and time stamp," Star tells me. "And once the videos are tagged we can compare them to one another, so that if for example, one request results in 1,000 videos, we can compare the content of every video and if a majority of the videos show the same content, then it can verify the authenticity of what has been shot.

"If 800 videos out of 1,000 show the same thing then the probability that the video has been faked is very low." VeriFlix uses the YOLO (You Only Look Once) real-time object detection algorithms to classify and label contents of videos, before passing that data through to proprietary algorithms, designed in partnership with KU Leuven University. These algorithms analyze the data, alongside timestamp and geolocation information passed through the application's secure interface. Star says "There are two main advantages – the first is that media companies can now make sure that videos they use are authentic and shot in the location where they say they are taken, and not modified or doctored. "The other advantage is that they are able to bridge

the gap between themselves and their audience – let their audience become a part of the story, and source exclusive and verified content very quickly. It can be for small things, too – it doesn't have to just be big, breaking news." As is common with those working in today's AI space, Star is keen to point out that the idea isn't to put journalists and human fact-checkers out of jobs. "It will not replace the job of the journalist – we will always need journalists to put everything in perspective, but to get the raw data, this will be a great tool." Of course, as technology advances, the tools that fakers use to attempt to pull the wool over our eyes are likely to become increasingly sophisticated. It's already possible to make highly realistic videos putting words in the mouths of people who would, in reality, be very unlikely to say such things. This doctored video of Obama being rather rude about Trump is a great example (warning, contains explicit language). Over time it's likely we will see a continuation of the arms race which has always existed in the technology sphere – with good guys racing against the bad guys to be the first to deploy the latest and most powerful tools. Fake news is unlikely ever to be fully eradicated – there will always be someone willing to present a skewed version of the truth to push their own agenda. However, it could be the case that tools like VeriFlix, or whatever comes next, will raise the barrier regarding the tech and expertise needed to hoodwink us, going some way toward making the world a more truthful place.

## VII. CONCLUSION

We have therefore developed an AI-based model using unsupervised machine learning techniques to support the early stages and which helps detect emerging technologies and innovations at an early stage. In this paper we purposed the latest technologies which are Decision management, Machine learning, Deep learning platforms, Biometrics, etc.

We hope that this article will inspire future research and will help practitioners recognize relevant changes more quickly for making better-informed decisions benefiting our economy and society.

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