

# Assessment on Recurrent Applications of Machine Learning and its Behaviours



R. Dhaya, M. Devi, R Kanthavel, Fahad Algarni, Pooja Dixikha

**Abstract:** Artificial intelligence (AI) and machine learning are at the moment measured to be the unique widespread inventions. Artificial Intelligence rummage-sale to stand an unbelievable conception from science fiction, but nowadays it's flattering a day-to-day authenticity. On the other hand, a neural network emulates the procedure of actual neurons in the brain that are parquet the track near innovations in machine learning, baptised deep learning. Machine learning can cosiness us living cheerier, improved, and additional dynamic conscious, if the power of the Deep learning concepts and its proper utilization as an industrial revolution that harness mental and cognitive ability. Currently lots of research papers deal with the Artificial Intelligence of deep learning in various real time applications that includes intelligent gaming, smart driving, and environmental protection and so on. Irrespective of all applications an intelligent decision making must be done timely to improve the accuracy in one end and simultaneously on the other end to consume energy and system efficiency. This paper presents the various applications using deep learning efficiently by better decision making and also how to visualize the problems in order to take a conclusion for better solution. The analysis of such real time problems is done by logically in the form of using artificial neurons through supervised and unsupervised data.

**Key words:** Artificial Intelligence, Deep learning, Data Science and automation.

## I. INTRODUCTION

Deep learning investigations over a fake neural system that deeds are comparable a human mind and allows the machine to explore information in a structure as people do. Deep learning machines needn't bother with a human developer to state them how to manage the information which can be conceivable by the remarkable measure of information gathered and devoured information for deep-learning models [10]. An intelligent gaming can be specifically created after trained methods not by just investigating the transfers of the very best players, but by erudition how to face the game well from committed in contradiction of by millions of eras. The leap into self-driving cars is further complicated. There are many cars on

the road, interferences to circumvent, and precincts to excuse for in terms of traffic designs and rubrics. Even so, self-driving cars are previously realism. These AI-powered cars have even flattened human-driven cars in protection learning says with the title as self-learning cars and automated transportation. Obviously, human physiques and minds have constructed in boundaries, faintness and knowledge can increase to such a magnitude that are to be augmented some of our paleness and restrictions with computers, thus cultivating numerous of the normal aptitudes[5]. AI becomes advantageous intended for persons by removed extremities and the mind could clever to interconnect by a conceivable robotic extremity by the expertise is called as cyborg technology to stretch amputees additional controller and decrease the everyday boundaries they treaty with. Likewise, the most dangerous jobs are bomb disposal and welding by human under typical situations and robots are taking over these risky jobs, among others by using machine learning technology with AI. Figure 1 shows the Relationship of AI, MI and Deep Learning [22]. Another risky job actuality subcontracted to robots is welding and this type of work yields sound, penetrating heat, and poisonous materials originate in the exhausts. Deprived of machine learning, these robot welders would vital to be pre-programmed to repair in a confident position. Though, progressions in computer vision and deep learning have authorized added elasticity and better accuracy.

Machines can hoard and access a bigger number of information than the human and they could do incredible insights to touch base at answers for beforehand unsound issues. Figure 2 shows machine learning process. In addition, AI examinations natural information from a large number of sensors and sources to item exact, advancing climate and contamination estimates to moderate and ensure ecological effect [12]. The robot can be customized to convey human feelings, advance its own, and bolster its human companions remain upbeat as computerized compassion and robots as companions. For some seniors, regular errands can be a battle. Many need to employ outside help or depend on relatives. Senior consideration is a developing worry for some families and older relatives who would prefer not to leave their homes could be helped by in-home robots and thus AI upgrades the forlorn of a maturity people. What's more, restorative and AI scientists have even steered frameworks dependent on infrared cameras that can see when an old individual falls. Scientists and restorative pros can likewise screen liquor and sustenance utilization, fevers, anxiety, urinary recurrence, chair and bed comfort, liquid admission, eating, dozing, declining versatility, and the sky is the limit from there.

Manuscript published on 30 September 2019.

\* Correspondence Author (s)

**R.Dhaya**, Dept. of Computer Science, King Khalid University, SaratAbidha Campus, KSA.(email: dhayavel2005@gmail.com)

**M.Devi**, Dept. of Computer Science, King Khalid University, SaratAbidha Campus, KSA.(email: devinov6@gmail.com)

**R Kanthavel**, Dept. of Computing and Information Technology, University of Bisha, Bisha, KSA.(email: kanthavel2005@gmail.com)

**FahadAlgarni**, Dept. of Computing and Information Technology, University of Bisha, Bisha, KSA.(email: fahad.a.algarni@gmail.com)

**PoojaDixikha**, Dept. of ECE, Sona College of Technology, Salem, Tamilnadu, India.

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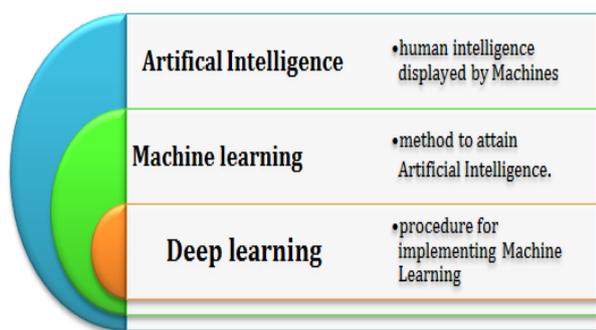


Figure 1: Relationship of AI, MI and Deep Learning

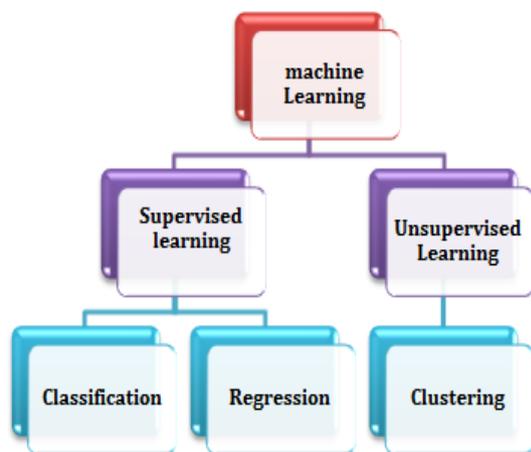


Figure 2: Machine Learning Process

Medical clinics that use machine figuring out how to aid in treating patients see less mishaps and less instances of emergency clinic related ailments, similar to sepsis. AI is likewise setting out a portion of prescription's most recalcitrant issues, for example, allowing analysts to more readily comprehend hereditary ailments using prescient models. Already, wellbeing experts must audit reams of information physically before they analyze or treat a patient. Profound learning models rapidly give continuous bits of knowledge and, joined with the blast of processing power, are helping social insurance experts analyze patients quicker and all the more precisely, create inventive new medications and medicines, lessen therapeutic and demonstrative mistakes, foresee unfavorable responses, and lower the expenses of human services for suppliers and patients[21]. Another essential application is to have financial balances and Visas to be utilized. Utilizing area information and buy designs, AI can likewise help banks and credit backers distinguish false conduct while it is going on. These machine learning based oddity location models screen exchange requests.[1] They can spot designs in your exchanges and ready clients to suspicious movement. They can even affirm with you that the buy was without a doubt yours before they process the installment. Machine learning has huge potential in the entertainment business, which are as of now being utilized to dispose of buffering and low-quality playback, getting the best quality from your network access supplier. Shopper AI will empower wave after influx of helpful computerizations in the home. At the point when joined with apparatuses, AI could make housework and family unit the executives seamless.AI-controlled

applications which enable the broiler to speak with the cooler and the storeroom robot would act like home gourmet experts. Moment recharging of nourishment and supplies would mean failing to run out of anything again. Cleaning could be plan through sensor-to-apparatus associations, after which mechanical cleaners would work totally autonomously of people. Table 1 explains the Difference of machine learning and profound learning .Another preferred standpoint of keen homes would be a reduction in family unit squander and mechanized reusing, putting the family in better offset with the biological system. Discharging people from housework could convey significant advantages regarding improving sustainability, sparing time, and decreasing pressure. The main objective of this paper is two folded. The first one is to focus on the real time applications of machine learning of different domains in day to day life and secondly to analyse the same under various aspects like performance enhancement and smartness for effective decision making.

Table 1: Difference of machine learning and deep learning

Subject	Machine learning	Deep learning
How it works?	Machine learning is built on the information or knowledge that machines must be talented to study and adapt ended experience	Deep learning is a wider knowledge where machines can implement tasks "smartly"
Management	Various algorithms	Data analysis
Number of data Points	Few thousand of data used for analysis	Few millions of data used for analysis
Output	Numerical value	Any-form

## II. REAL TIME APPLICATIONS OF MACHINE LEARNING& RESULTS

### 2.1 Virtual Assistants

Artificial Intelligence (AI) is all over the place. Machine learning (ML) is one of the conservative requests of AI, in which computers, software, and devices accomplish finished intellectual (authentic alike to humanoid brain). Machine Learning usages are flourishing in which computers, software, and devices achieve through thought (very comparable to human brain). Virtual assistants work practically also to other AI applications we've officially secured .The deal of Virtual assistants technology is their dependence on AI. Some examples of this technology are Google Duplex, Apple Siri, Google Now, Cortana , Microsoft claim and Alexa. These astute assistants at that point furnish you with the asked for information or send commands to different applications, contingent upon the demand. It could help plan your day or set updates, and so on [2] .As the name proposes, virtual assistant finding information, when asked over voice. We should simply actuate them and inquire “What is the time and venue for today’s meeting?”, “What are the flights as of UK to US”, or alike questions. Now, personal assistant verify the information by memories your related enquiries, or show a

expertise or command to Phone apps or other resources to gather info. Moreover, We can teach supporters for certain tasks like “Set an reminder alarm for birthday party at 6 PM on Thursday”, “Remind me to visit General Manager day after tomorrow”. Figure 3 shows the Alarm Clock for Virtual Assistant Virtual Assistants are incorporated to a diversity of platforms[20].



Figure 3: Alarm Clock for Virtual Assistant

2.2 . Predictions While Commuting

Consumers are predicted to download more than 205 million mobile apps in 2018 and dozens of these apps can help with transits navigation. This prediction help to reduce risk while commuting and provide circumstantial awareness while commuting.

- Inrix commute: Windermere is the biggest land firm in the Pacific Northwest, required extraordinary exertion toward making driving time gauges increasingly precise.

- Traffic Prevention and congestion analysis: Using GPS navigation services, our present areas and speeds are being spared at a focal server for directing traffic. This information is then used to develop a guide of current traffic. While this aides in keeping the traffic and does clog examination, the fundamental issue is that there are less number of vehicles that are outfitted with GPS.

- Online Transportation Networks: With the help of machine learning, the app evaluations the worth of the trip when booking a cab. ML is playing a major role in the entire cycle of the services.

- Real-time rides: Google Maps is working with transit systems worldwide. It shows that where our flight, bus or train is in real time.

2.3. Videos Surveillance

Machine learning significantly upgraded security and safety by the way videos surveillance. This surveillance system powered by AI & ML kinds it imaginable to notice corruption prior they happen [6]. The abnormal behaviour such as immobile standing for a long time, suspicious or napping on a bench etc., track by the sensor and the framework can give a ready which can at last help to maintain a strategic distance from accidents. Segments, for example, retail could likewise profit by ML, for example, performing individuals tallying to decide most noteworthy

purpose of-offer zone. A few organizations which offers AI and machine learning innovation for video observation [7]:

- Vi Dimensions ARVAS Smart Surveillance System
- Ultinuous : Alert Platform for Retail
- Hitachi : Image Analysis Knowledge for Real-Time People-Detection and Tracking
- Everseen : Point-of-Sale Video Analytics
- Xovis : PC3 3D Stereo Vision Person Tracking Sensor

2.4. Social Media Services

Social media services monitored and exponential growth can be expected due to machine learning. Figure 4: explained the Social Media Services.

- Business support: The social media is a huge outlook for communication that has a torrent of information about the product. [8].

a.Machine Learning can be analyse the entire social network for interpreting the customer attitude such as happiness ,anger ,dissatisfaction etc., This analysis is one of the brilliant aspect for business people[19].

b.In social media, enormous quantity of statistics or information is available. Machine learning can mining the data without any noise and filter the relevant data [14].

c.We can use Natural language processing and Machine learning to categorize and analyse the different elements of a customer’s trip in real time to take strategic business decisions [9].

- Facebook - People You May Know: Facebook notices that very often whose profiles are visited by us and our interests etc., now the machine learning understanding with experiences. n the reason of constant learning, a rundown of Facebook clients are prescribed that you can progress toward becoming companions with.

- Face Recognition: You transfer an image of you with a companion and Facebook quickly perceives that companion. Facebook checks the stances and projections in the image, see the novel highlights, and after that coordinate them with the general population in your companion list [13].

- Pinterest - Similar Pins: Pinterest engineers are utilizing machine figuring out how to keep the site's 150 million– in addition to clients sticking and sharing [1]. Pinterest utilizes Machine figuring out how to keep their clients stuck. It helping clients discover content that resembles pictures they've just stuck, since it is the center component of Computer Vision.



Figure 4: Social Media Services

2.5. Product Recommendations

Product Recommendation systems are the greatest effective and pervasive application of machine learning technologies in business part. Numerous wholesalers or sellers use automated product recommendations to growth their sales and alterations [3]. These type of recommendations are typically vigorously spawned on an e-commerce site, and they stand naturally built on the purchase habits of a specific customer, or a group of customers [4]. At Present, there are three main methods or techniques maximum of the production recommendation engines work. Those are content based filtering method, collaborative filtering method and hybrid filtering method. Whichever depends on the properties of the things that each user loves or choses or noticing what different the user may like as content-based filtering method. Product recommendation engines can trust on an adores and needs of other users in order to calculate a resemblance catalogue among the users and recommend things to them consequently as called collaborative filtering method. The hybrid filtering method is the combination above two. Figure 4 explains the Types of Recommender system.

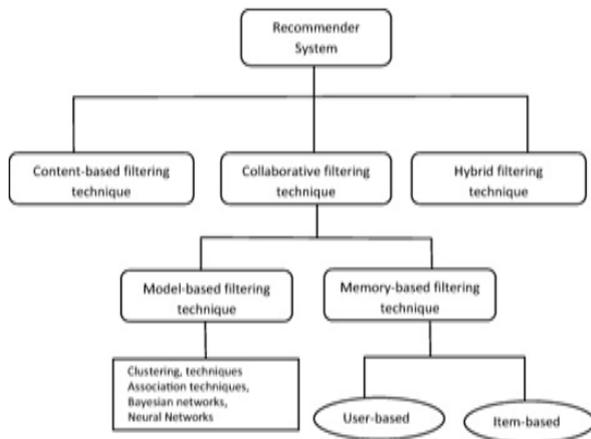


Figure 5: Types of Recommender system

2.6. Online Fraud Detection

Online fraud protection is the procedure of defensive oneself from being enticed into scams over the Internet which is shown in figure 6. Or detecting fraudulent communications after the payment is approved[11]. With the extensive number of exchanges or transactions, we observe regular and we can't demand that human investigator check each exchange one by one. We wish to automatize to finding of false exchange or fraudulent transactions and the necessity to precise expectations [15]. There are two standard approaches are used for this fraud detection that are expert driven approach and data driven approach. Expert Driven Approach is a direct approach to automatize recognition is to deliver the rubrics that feat the fraud expert knowledge. Data Driven Approach is an indirect approach to acquire the rules or rubrics automatically for finding fraudulent patterns. machine learning can obviously recognize real and fraudulent practices while adjusting after some time to new, already concealed misrepresentation strategies. This requires a large number of calculations to be precisely performed in milliseconds.

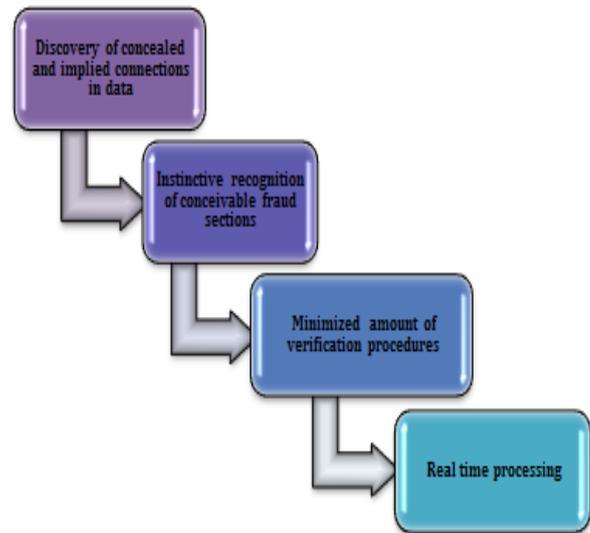


Figure 6: Online Fraud Detection

2.7 Search Engine Result Refining

Search engines like to reliably investigate distinctive roads in regards to how can usage this making growth, yet here are nine diverse ways we understand that they are starting at now using machine learning and how it relates to SEO or progressed advancing. Those are talked about as pursues.

Pattern Detection-Search motors are using machine learning for instance area that help recognize spam or duplicate substance. Search motors are utilizing machine learning for pattern detections that assistance distinguish spam or copy content[18]. They connected regular traits of low-quality substance, such as: The nearness of a few outbound connects to random pages, Lots of employments of stop words or synonyms and Other such factors. Having the capacity to identify these sorts of patterns radically eliminated the labour it takes to survey everything by genuine individuals. Machine learning is a consistently developing innovation, so the more pages that are broke down, the more exact it is (in principle).

Identifying New Signals: According to a 2016 digital recording finished with Gary Illyes from Google, Rank Brain not just recognizes patterns in inquiries, it likewise helps the search motor distinguish conceivable new positioning signs. These signs are looked for after so Google can keep on improving the nature of search query results. Illyes additionally referenced in the digital recording scene that a greater amount of Google's signs may move toward becoming machine learning-based[17].

It's weighted as a Small Portion: However, despite the fact that machine learning is gradually changing the way search motors find and rank sites, it doesn't mean it has a noteworthy, critical effect (right now) on our SERPs. In the equivalent digital recording meeting, Illyes says that it's simply part of their general positioning sign stage, and is weighted as a little segment of their general calculation. Google's true objective is to utilize innovation to furnish clients with a superior affair [16].

Custom Signals Based on Specific Query: Machine learning in search motors may shift contingent upon the query classification or expressing. They found that the sorts of results showed depended to a great extent on the query classification or stating. This implies machine learning can put more loads on factors pretty much vigorously in specific inquiries over others. By and large, it was discovered that customized searches customized by machine learning expanded the active visitor clicking percentage (CTR) of results around 10 percent.

Image Search to Recognize Photos: Everyday volume of photos that should be indexed and investigated on the web day by day for web-based social networking. This task is perfect for machine learning since it can explore shading and shape precedents and match that with any ebb and flow development information about the photo to help the search motor fathom what an image truly is. Clients would then have the capacity to find distinctive instances of the photograph on the web, similarly as near photos that have comparable subjects or shading palette and information about the subjects in the photograph; this infers Ad Rank can be affected by a machine learning framework.

Synonyms Credentials: - When you see search results that do prohibit the watchword in the bit it's achievable in view of Google using Rank Brain to recognize equal words.

Query Clarification-Customers may search buy, examination or catch properties for any predefined search. Moreover, a watchword may be reasonable to one or any of these reasons. By investigating click traces and the substance type that clients draw in with a search motor can impact machine figuring out how to characterize the settled things.

### III. PERFORMANCE ENHANCEMENT AND SMARTNESS FOR EFFECTIVE DECISION MAKING.

In Machine learning, decision making depends on the various algorithms and procedures. Some of the algorithms or methods are listed below.

#### 3.1 Linear Regression

Linear regression is maybe a standout between the greatest unresolved and confidently distinguished calculations in capacities and machine learning. The portrayal of ordinary relapse is a condition that delineates a line that best fits the association between the data factors (x) and the yield factors (y), by finding unequivocal weightings for the data variables called coefficients (B)

#### 3.2 Logistic Regression

Logistic regression is another process ,obtained by machine ahead from the field of measurements [24]. It is the go-to approach for twofold arrangement issues . Logistic regression looks like straight regression in that the aim is to determine the potentials for the constants that weight each info variable.

#### 3.3 Linear Discriminant Analysis(LDA)

The representation of LDA is really conventional mechanism. It includes of quantifiable belongings of your information, resolute for each class. For a solitary info

variable this includes: are the mean an inducement for each class and the alteration strong-minded over all classes

#### 3.4 Classification and Regression Trees

Decision Trees are a dangerous caring of calculation for prophetic displaying machine learning. The depiction of the decision tree validates is a double tree

#### 3.5 Naive Bayes

Naive Bayes is a direct yet outrageously astonishing scheming for prescient modelling. The demonstration is complicated two kinds of likelihoods that can be determined exactly from your preparation information: 1) The likelihood of each class; and 2) The contingent likelihood for each class given every x esteem. When determined, the likelihood model can be utilized to make forecasts for new information utilizing Bayes Theorem

#### 3.6 K-Nearest Neighbors

The KNN algorithm is remarkably forthright and tremendously powerful. The model interpretation for KNN is the complete formulating dataset [25]. Estimates are completed for added evidence point via watching complete the entire preparing set for the K most comparable cases of the neighbour's and outlining the harvest variable for those K examples.

#### 3.7 Learning Vector Quantization

A disadvantage of K-Nearest Neighbors is that you have to adhere to your entire preparing dataset. The Learning Vector Quantization calculation (or LVQ for short) is a counterfeit neural network calculation that allows you to pick what number of preparing occasions to cling to and realizes precisely what those examples should look like.

#### 3.8 Support Vector Machines

Support Vector Machines are might be a champion among the most notable and thought machine learning estimations. A hyper-plane is a line that offers the information variable space. In SVM, a hyper-plane is picked to best unquestionable the focuses in the data variable space by their group, either class 0 or class 1[23].

#### 3.9 Bagging and Random Forest

Random Forest is a standout amid the most well known and greatest leading machine learning designs. It is a kind of gathering machine learning calculation named Bootstrap Aggregation or sacking.

#### 3.10 Boosting and AdaBoost

Boosting is a gathering methodology that attempts to make a strong classifier from different slight classifiers. This is done by building a model from the planning data, by then making a second model that tries to address the oversights from the important exhibit [26].

An ordinary request by a learner, while standing up to a wide grouping of machine learning calculations, is "which calculation should I use?" The reaction to the request changes depending upon various segments, including: the

size, quality, and nature of data, the open computational time, the genuineness of the endeavour; and What you have to do with the information. In spite of the way that there are various other Machine Learning calculations, these are the most conspicuous ones.

### IV. LIMITATIONS OF MACHINE LEARNING

Each and every technology or mechanism has some extend of limitations. Here some limitations of machine learning are as follows

- Time Constraint in Learning: It is difficult to make prompt exact expectations. Likewise, recall one thing that it learns through authentic data. In spite of the point that, it's prominent that the greater the information and the more it is presented to these information, the better it will perform

- Problems with Verification: Another restriction is the absence of check. It's hard to demonstrate that the forecasts made by a Machine Learning framework are reasonable for all situations.

### V. FUTURE OF MACHINE LEARNING

Machine Learning can be an upper hand to any organization be it a best MNC or a start-up as things that are at present being done physically will be done tomorrow by machines. Machine Learning upheaval will remain with us for long thus will be the eventual fate of Machine Learning.

- Machine Learning will be a Necessity for Endurance: Tireless improvement in the predominance of machine learning, it will end up being dynamically forceful for relationship to get by in the business if they are not part of this brief craze soon.

- Research to Embellishment: inspect was obliged to simply academic world, anyway now investigate has been flourishing in scholastics similarly as the business. Research in this field continues reaching out as different resources being contributed now is more than ever.

- Endure to Astound Us: Machine learning have been stunning each and every day with its capacities to do wonders and this example will continue later on too.

### VI. CONCLUSION

This paper presented the detailed research analysis on various real time day to day applications of Artificial Intelligence using Deep learning. From the investigations it is presumed that the deep learning is a zone of information science that is staggeringly scary and potentially inspires machines to learn like people. Both machine and deep learning are subsets of artificial intelligence, however deep learning speaks to the following advancement of machine learning. In machine learning, calculations made by human software engineers are in charge of parsing and learning from the information. They settle on choices dependent on what they gain from the information. Client experience, Translations, Adding shading to highly contrasting pictures and recordings, Language acknowledgment, Autonomous vehicles, Computer vision, Text age, Image inscription age, News aggregator dependent on slant and Deep-learning robots are the significant regions where Deep learning could be viably connected as artificial intelligence through successful basic leadership as a best apparatus. Consequently, the development of deep-learning models is

foreseen to stimulate and produce much progressively inventive applications in the coming days.

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