Journal of Harbin Engineering University
ISSN: 1006-7043
Vol 44 No. 7
July 2023

Astrological Predictions Using Artificial Intelligence and Machine Learning

Shantanu Kanade
Manager, IESA, Pune,India
shantanukanade@gmail.com

Anuradha Kanade
Program Head, MITWPU, Pune, India
anuradha3279@gmail.com

ABSTRACT-Astrology has long been a subject of fascination and intrigue, with millions of individuals seeking insights into their future based on celestial alignments. The advent of artificial intelligence (AI) and machine learning (ML) has opened up new possibilities for analysing astrological data and making accurate predictions. This research paper explores the intersection of astrology and AI/ML, discussing the potential benefits, challenges, and future directions of incorporating AI and ML techniques into astrological predictions. The paper also provides an overview of existing research, methodologies, and applications, highlighting advancements in this emerging field.

Index Terms: Astrology, Astrological Prediction, Artificial Intelligence (AI), and Machine Learning (ML).

1. INTRODUCTION

1.1 Background

Astrology connotates an ancient discipline that involves the calculation of planet positions to forecast or make predictions of various events that occur [3]. Astrology provokes significant interest among individuals, which helps in scientific hypotheses and their association with astrology. The projections made in astrology are associated with elements such as zodiac signs, positions of planets, and different cosmological aspects [3]. To develop an astrological prediction, the astrologer analyses and make a comparison to the initial horoscopes. Similarity analyses and integration of an individual's previous horoscopes could be used to make further predictions. In addition, astrology does not only involve simple prediction analysis; it also constitutes profound and massive computations associated with individuals' lives within society, including mindset, studies, work environments, assets, liabilities, probabilities, and health paradigms [3]. Incorporating these elements has resulted in a modern mechanism of astrological predictions that employs patterns of artificial intelligence (AI) and machine learning (ML).

The contemporary technological paradigms and advancements of AI and ML have opened multiple possibilities for astrology and astrological predictions. Techniques and models of AI and ML are being used in various applications in astrological predictions ranging from classification, prediction, comparison, computations, and analyses [1]. Procedures such as logistic regression, simple cart algorithms, neural networks, Bayesian networks, and decision table algorithms are used for multiple domains, including astrological predictions [1].

1.2 Research Objectives

The primary focus of the study involves a profound analysis of critical insights associated with current astrological predictions using AI and ML. The research explores the connection between Astrology, its predictions, and AI and ML, portraying the potential benefits, problems, and future approaches of integrating AI and ML models and techniques to astrological predictions. The critical concepts of astrology, data collection and pre-processing techniques, and different forms of AI and ML algorithms utilised in astrological predictive modelling are explored. Subsequently, the study will outline potential advancements and why human-AI and ML incorporation is essential in astrological predictions.

1.3 Scope and Limitations

This research profoundly explores the domain of astrological predictions and the use of AI and ML to achieve these predictive techniques. In addition, the challenges faced in the predictive techniques and the possible future advancements that could be made to enhance the phenomenon are explored. It is critical to

note that until now, only limited studies and investigations have been undertaken to prove the validity and association between astrological predictions and AI/ML [1]. This connotates one of the study's significant limitations, as it relies on the previous literature and studies.

2. ASTROLOGICAL CONCEPTS AND DATA

2.1 Overview of Astrology

Astrology constitutes an ancient discipline that involves the calculation of the positions of planets to portray whether a particular event will be good or bad. The predictions majorly depend on the similarities of the zodiac signs, positions of planets, and various elements between these positions [4]. The nine planets and cosmological elements used in making the astrological predictions are referred to as 'Navagraha,' and they include the Sun, Moon, Mercury, Mars, Jupiter, Saturn, Venus, Rahu (North node and Kethu (South Node) [3]. These elements have been used for astrological anticipations and predictions.

2.2 Astrological Data Collection

In astrology, data is not collected systematically; instead, pre-existing astronomical data is utilized. These involve the positions of planets and other cosmological objects, which are profoundly documented. These pre-existing data constitute databases and tables that project the positions and movements of cosmological objects at particular periods [4]. In addition, the astrological chart constitutes the primary document used to make the forecasts and connotates the 'Rasi,' a cluster of twelve dwellings with equal segments. Nevertheless, these twelve elements are Taurus, Aries, Cancer, Gemini, Virgo, Libra, Leo, Sagittarius, Scorpio, Aquarius, Capricorn, and Pisces [4]. Therefore, all the twenty-seven celestial objects get positioned in any of the twelve houses. Figure 1. below shows the twelve houses used as the primary foundation for astrological documentation and data mining.

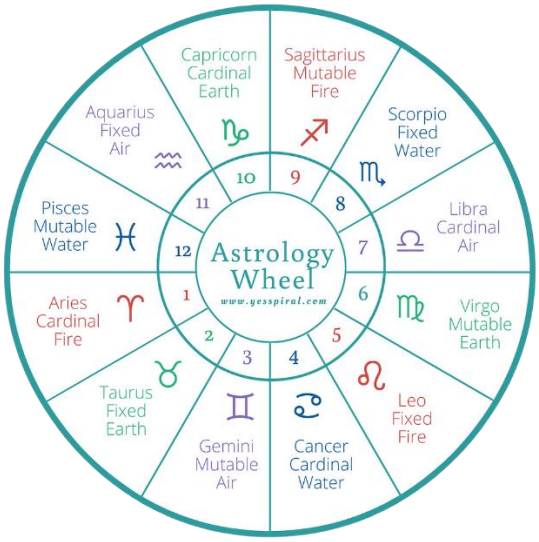

Figure 1. The twelve houses used for Astrological documentation

Data is mined from a collection of huge existing information and used for prediction paradigm. Data Mining (DM) is essential in astrological data collection. Data mining involves the mechanism of extracting information as well as concealed truths from huge data collections [3].

2.3 Data Preprocessing and Cleaning

After astrological data collection, the data preprocessing and cleaning are critical in astrology toward realizing a profound outcome of the analytic algorithm or the predictive forecast. Data preprocessing and cleaning constitute altering the raw dataset into an understandable structure or format [5]. Astrological data preprocessing and cleaning is conducted during data mining and achieved through two central data mining mechanisms: descriptive and predictive.

The major descriptive mining techniques associated with astrological data preprocessing and cleaning involve association rules, sequence finding, and clustering [5]. These descriptive mining approaches tend to emphasize the basic data conditions. On the other hand, predictive mining approaches involve classification, time series analysis, or regression to achieve data preprocessing [5]. These approaches assist in solving multiple difficulties realized in the astrological data. This would allow for the profound analysis of the vast quantum of

information, helping to forecast numerous dimensions of an individual's life.

3. ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

3.1 Introduction to AI and ML

There is no singular agreed definition of AI. However, recent definitions of AI focus on varying elements of AI, including its ability to learn, its capability associated with emulation, and how it gets designed to mimic human skills as well as capabilities [6]. Different works, such as those of Berente, have described AI as the technique of simulating human intelligence mechanisms by machines, including computer systems. Also, the phenomenon has been portrayed to involve a realm that integrates computer science and deep datasets that allows for problem-solving in various fields. The AI algorithms attempt to develop expert systems that realize predictions, forecasting, or categorization based on the input data. Unique AI applications include expert systems, machine vision, speech recognition, and natural language processing [3].

ML constitutes a segment of computer science whose primary objective involves allowing computers to 'learn' without direct programming [7]. ML originated from artificial movement in the 1950s and emphasized practical aims and applications, especially optimization and predictive patterns. In machine learning, computer systems 'learn' by enhancing their performance at functions by 'experience' [6]. In application, 'experience' often involves aligning to data; therefore, there is no profound parameter between ML

3.2 AI and ML Techniques in Astrology

Various AI and ML techniques are profoundly integrated into Astrology. AI and ML correlate with different domains of information that allow for the definition of inference rules. AI offers a mechanism to utilize software such as exposure for prediction logic. Since Astrology robustly involves a prediction-based concept, AI forms one of the core and Almanac databases utilized as a backend for the involved predictions [3]. In the past, Astrologers adhered to universal and standard rules to analyse Astrological concepts and specify an individual's Astrology. With technological advancements and the enhancement of AI and ML, different Association rules, Classification mechanisms, Linear Regression, Logistic Regression, Prediction Analysis, and Support Vector Machines are used for Astrological predictions [1].

In addition, the classification mechanisms of AI assist in creating generalized hypotheses from a cluster of data, therefore, allowing for the making of future predictions based on the generated hypothesis. These mechanisms create algorithms whose foundation stems from existing data, and the class labels are already known [1]. Algorithms are classically created on a training dataset and tested on independent test data established to analyse their accuracy.

Various ML techniques also play an essential role in astrological predictions. Initially, the conventional techniques used profoundly limited profound Astrological predictions, and thus semantic inference rules are portrayed as proofs for Astrological forecasting. Astrological consumers want to know forecasts associated with ontology and personalized predictions. This has resulted in the implementation of ML techniques. One of the most utilized ML techniques in Astrological predictions involves logistic regression under the supervised learning category [7]. This technique is used to predict the class label, especially on the dependent or more independent variables of the involved dataset.

ML algorithms aim to enhance the automation of Astrological predictive patterns. Similarly, automation of Astrological notions using recommendations of the users rather than manual computation enhances the efficiency and accuracy based on the inferences. Implementing ML in Astrological predictions often requires a well-portrayed and authenticated dataset, model selection, system training, testing, and validation mechanisms, which generally lack in the traditional approaches to Astrological predictions or forecasting [8]. Therefore, ML techniques play essential roles in modern Astrological predictions.

3.3 Feature Extraction and Selection

Feature extraction and selection mechanism are utilized when the explainability of a given model is required [9]. This allows for the enhancement of the predictive performance of models, especially on algorithms that do not conform with regularization. In Astrological prediction paradigms, feature extraction and selection are critical in determining necessary input variables [4]. When AI and ML approaches get implemented in forecasting, the phenomenon could constitute the identification of particular celestial objects and other relevant data, including aspects, celestial parameters as well as angles. This mechanism would constitute the definition of a particular cluster of features that would be perceived to be essential in realizing accurate forecasts or predictions.

Therefore, feature extraction and selection would be used in creating recognition models that would be essential in solving challenges associated with predictions. As a result of the slight variation in data types suitable for different AI and ML prediction algorithms, the fundamental requirement in Astrological prediction would involve the selection of the most appropriate prediction algorithm for a particular data type [2]. The most critical element that impacts the prediction accuracy of AI and ML recognition models involves feature selection since the selection of uncorrelated features or features that are less correlated with the target variable would impact the predictive performance of the AI and ML recognition model. Figure 2. depict the centrality of feature extraction and selection in AI and ML Astrological predictions.

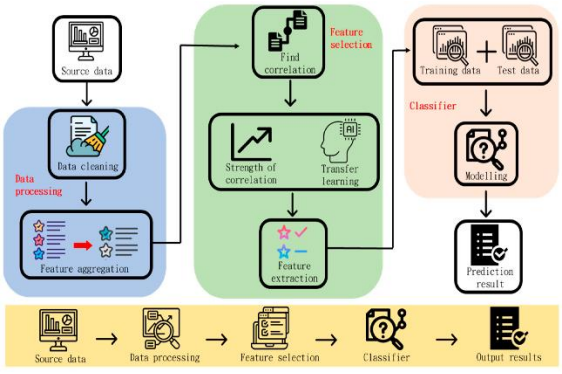

Figure 2. Feature extraction and selection in AI and ML Astrological predictions [10].

3.4 Predictive Modeling and Algorithms

Different AI and ML predictive mechanisms are profoundly integrated into Astrological predictions. One of the predictive models used involves logistic regression logistic. This form of modeling involves a probabilistic statistical classification model that gets utilized to predict class labels based on one or multiple predictor variables [3]. The involved variables are not continuous. Another algorithm used involves Simple Cart Algorithm. This algorithm constitutes a decision tree algorithm that integrates the attribute selection by incorporating minimal cost-complexity pruning [1]. Furthermore, the algorithm develops binary trees; thus, each internal node accurately possesses two outgoing edges.

Another algorithm used in Astrological prediction constitutes the Naïve Bayes Classification Algorithm. This algorithm is based on probabilities and the notion of independence of the variable [6]. The algorithm assumes that the existence or non-existence of class features is unrelated to the existence or non-existence of any other features. Also, the decision stump algorithm includes a one-level decision tree that is used to make Astrological predictions and has one root node connected to a leaf node [6]. The algorithm makes forecasting based on a single input feature value, thus also referred to as 1-rules.

4. APPLICATIONS OF AI AND ML IN ASTROLOGICAL PREDICTIONS

4.1 Personalized Horoscope Generation

One of the major segments that AI and ML are implementing in Astrological prediction involves the realization of personalized horoscopes. AI and ML algorithms and predictive models could be used in making personalized predictions. In Astrological forecasting, some common paradigms have metamorphosized using planets mapped to the Horoscope chart using various mechanisms, including Case-Based Reasoning [4]. Traditional approaches to Astrological prediction portray that a horoscope involves nine celestial objects to make predictions. However, integrating AI and ML approaches and techniques, including classification mechanisms,

association rules, and logistic and linear regression, allows for creating personalized horoscopes of Astrological predictions. In addition, ML models and approaches could learn paradigms from previous horoscope data to make personalized predictions of future events for an individual.

4.2 Astrological Compatibility Analysis

Astrological compatibility analysis involves the mechanism associated with assessing the similarity or alignment between individuals and their astrological charts. It constitutes the technique of comparing and analyzing different astrological elements, including positions of cosmological objects, to project the possible alignment of two people in varying segments of life, such as partnerships.

AI and ML approaches are implemented in astrological compatibility analysis since the approaches can correlate different fields of information to portray conclusion rules and different inferences [8]. These approaches offer mechanisms to integrate prediction logic and subsequently realize an analysis of Astrological compatibility.

4.3 Financial Market Predictions

AI and ML approaches have been significantly implemented in financial market predictions. In the financial domain, AI algorithms could be utilized in recognition of patterns as well as trends associated with market data [11]. The data could emanate from various sources, including historical information on the market, movement of price, and trading paradigms. On the other hand, ML models could learn from the involved patterns to recognize comparable patterns and subsequently assist in financial predictions. In addition, the AI and ML algorithms and predictive models could be applied in time series analysis [11]. These algorithms could be essential in the analysis of time series data, including stock prices and other critical market indicators that would enable the recognition of upcoming values and chronological dependencies. AI and ML mechanisms that could be critical in realizing time series analysis for financial forecasting include Recurrent neural networks (RNNs) and the Autoregressive Integrated Moving Average (ARIMA) [11].

4.4 Health and Wellness Insights

AI and ML predictive models play essential roles in health and wellness insights. The models could be used in medical data analysis, including previous records of the patient, collected medical data such as imaging scans as well as genetic data [10]. Therefore, the analysis could be vital in diagnosing and forecasting various health complications. In addition, the models could be critical in realizing individualized treatment plans and patterns. Analysis of enormous amounts of patient data using AI algorithms could assist medical professionals in incorporating personalized treatment paradigms.

5. CHALLENGES AND ETHICAL CONSIDERATIONS

5.1 Interpretation and Validation of Astrological Data

The interpretation and validation of Astrological data have created various challenges and ethical considerations. One considerable ethical issue associated with its interpretation and validation involves the absence of scientific validity [12]. Scientific validity constitutes an assessment that allows for measurement of an instrument and how well it does and truthfulness. Astrology is often portrayed as a pseudoscience, and the interpretation and validation of its data as factual could create an ethical dilemma.

5.2 Bias and Fairness in Predictive Models

Analysis and integration of Astrological data could be impacted by bias and fairness in predictive models. Bias in data and predictive models could show up in multiple forms, including representation bias, historical bias, and measurement bias [12]. In addition, the predictive models could incorporate various forms of bias, including evaluation and aggregation biases. The former emerges during model iteration and evaluation. On the other hand, aggregation bias arises during model creation, where discrete populations get inappropriately integrated [12]. The possibility of various forms of bias in the feature and

selection stage and predictive models creates an ethical challenge in the domain.

5.3 Privacy and Data Protection

AI and ML and data privacy and protection constitute two increasingly intersecting domains. The use of personal data to analyze Astrological paradigms using AI and ML techniques has been scrutinized and resulted in the emergence of crucial ethical questions [8]. However, multiple guidelines have been postulated to ensure the use of personal data in big data analytics, such as Astrology, falls under the required parameters and does not violate privacy. Some of the policies that have been raised constitute ensuring the mechanisms of collecting, processing, and storing personal data comply with data protection policies and regulations; protection of personal data from reaching authorized hands and regular monitoring and auditing of the utilization of personal data to ensure its appropriate use [8].

5.4 Human-AI Collaboration

The Human-AI collaboration has created an enduring ethical dilemma involving the lack of transparency in AI use and AI tools. Decisions postulated by AI are not always intelligible to humans, and AI is not always neutral. The decisions made by AI could be susceptible to discriminatory results, inaccuracies, and inserted or integrated bias. Also, it has created surveillance actions for data collection that could invade the privacy of personal information [12].

6. FUTURE DIRECTIONS AND CONCLUSION

6.1 Advancements in AI and ML for Astrology

The use of AI and ML in Astrology is profoundly advancing with the constant enhancement of AI and ML paradigms and approaches. Emerging practices such as Edge AI and natural language allow users to integrate their Astrological data individually and obtain inferences [6]. Other advancements, such as Explainable AI, allow for enhanced transparency and the creation of less biased predictive models in Astrology. Some of the Explainable AI include interpretable ML models and rule-based systems [7]. These AI systems could illustrate the rationale for the decisions, therefore, improving transparency and understanding of the decisions made by the user.

6.2 Integration of Astrological Data with Other Fields

Currently and in the future, data associated with Astrology are critically integrated with other domains to probe various understandings, patterns, and interconnections [13]. Even though Astrology, at its core, cannot be validated scientifically, integrating its data with other domains could be a tentative practice that would result in insightful correlations and annotations. Some of the fields that are starting to combine Astrological data include psychology and individualism, health and wellness, historical chronologies, and economic elements [13].

6.3 Enhancing User Experience and Understanding

The constant evolution of AI and ML systems, predictive models, and algorithms critically considers user experience and comprehension of the systems and their inferences. These systems allow the users to analyze data and individual behaviors to realize and predict future user actions and preferences. This data could be used to optimize user experience by developing more relevant and personalized content. Other mechanisms, such as Explainable AI, further enhance user experience and understanding by providing the user with profound insight into decision-making approaches used by the AI and ML approaches and models.

6.4 Conclusion and Final Remarks

Astrology is one of the traditional ways that has always been used to make predictive patterns worldwide. The phenomenon has always been considered as a pseudoscience by the scientific community. Nevertheless, emerging technological tools such as AI and ML are starting to be considerably implemented in the field. Different AI and ML predictive models and algorithms are used to analyze Astrological data to provide forecasted inferences. Astrological data analysis using AI and ML approaches is still novel, and more studies should be conducted.

REFERENCES

[1] Chaplot, Neelam, Praveen Dhyani, and O. P. Rishi. "Astrological prediction for profession using classification techniques of artificial intelligence." In *International Conference on Computing, Communication & Automation*, pp. 233-236. IEEE, 2015.

[2] Gowrinath, CNVBR Sri, and B. Srinivasa SP Kumar. "Architectural Representation for Inference rules generation for Astrological Predictions using induction of Horoscope Charts." *International Journal of Applied Engineering Research* 13, no. 20 (2018): 14495-14497.

[3] Vigneswaran, L., and Nagadeepa, N. Prediction of research studies status on astrological data using machine learning (ML) classification techniques. International Journal of Health Sciences, 6(S6), 9696–9710, 2022.

[4] Perry, Glenn. "A Brief Introduction to Qualitative Research in Astrology." *Consulting Editors* (2020): 63.

[5] Wen, Qingsong, Kai He, Liang Sun, Yingying Zhang, Min Ke, and Huan Xu. "RobustPeriod: Robust time-frequency mining for multiple periodicity detection." In *Proceedings of the 2021 International Conference on Management of Data*, pp. 2328-2337. 2021.

[6] Berente, Nicholas, Bin Gu, Jan Recker, and Radhika Santhanam. "Managing artificial intelligence." *MIS quarterly* 45, no. 3 (2021).

[7] Bi, Qifang, Katherine E. Goodman, Joshua Kaminsky, and Justin Lessler. "What is machine learning? A primer for the epidemiologist." *American journal of epidemiology* 188, no. 12 (2019): 2222-2239.

[8] Kremer, Jan, Kristoffer Stensbo-Smidt, Fabian Gieseke, Kim Steenstrup Pedersen, and Christian Igel. "Big universe, big data: machine learning and image analysis for astronomy." *IEEE Intelligent Systems* 32, no. 2 (2017): 16-22

[9] Qian, Yufeng. "Exploration of machine algorithms based on deep learning model and feature extraction." *Mathematical Biosciences and Engineering* 18, no. 6 (2021): 7602-7618.

[10] Tsai, Ming-Fong, Chun-Ying Lan, Neng-Chung Wang, and Lien-Wu Chen. "Time Series Feature Extraction Using Transfer Learning Technology for Crop Pest Prediction." *Agronomy* 13, no. 3 (2023): 792.

[11] Gogas, Periklis, and Theophilos Papadimitriou. "Machine learning in economics and finance." *Computational Economics* 57 (2021): 1-4.

[12] Lipscomb, Lisa M. "On the Cusp of Legitimacy: Professionalization in the Field of Astrology." PhD diss., The New School, 2020.

[13] Jofré, Paula, Ulrike Heiter, and Caroline Soubiran. "Accuracy and precision of industrial stellar abundances." *Annual Review of Astronomy and Astrophysics* 57 (2019): 571-616.