

Applications of Pattern Recognition Techniques in Social Science

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Abstract

Pattern recognition is a branch of machine learning that focuses on the recognition of patterns and regularities in data, although it is in some cases considered to be nearly synonymous with machine learning. Pattern recognition algorithms can be effectively applied for analysis of big data obtained from society to predict possible chaos in future or to identify required changes needed for society or changing the public policies. This technical note reviews some method of pattern recognition in society.

Keywords: social science, pattern recognition, feature, chaos theory

1. Pattern Recognition Techniques

Pattern recognition is a branch of machine learning that focuses on the recognition of patterns and regularities in data, although it is in some cases considered to be nearly synonymous with machine learning. Pattern recognition algorithms generally aim to provide a reasonable answer for all possible inputs and to perform “most likely” matching of the inputs, taking into account their statistical variation. Pattern recognition is the automated recognition of patterns and regularities in data. It has applications in statistical data analysis, signal processing, image analysis, information retrieval, bioinformatics, data compression, computer graphics and machine learning. Pattern recognition has its origins in statistics and engineering; some modern approaches to pattern recognition include the use of machine learning, due to the increased availability of big data and a new abundance of processing power. However, these activities can be viewed as two facets of the same field of application, and together they have undergone substantial development over the past few decade (Howard, W. R., 2007).

Pattern recognition and analysis of data behavior using statistical tools have attracted more attention in recent years. Analysis of data behavior in the process is important in order to predict the future or identify abnormal behaviors with a correct understanding of the past and normal conditions. Indeed, the more deeply the analysis of data is, the more realistic decisions can be made and, as a result, these decisions will lead to better results.

In psychology, the recognition of a pattern means that Human will have some predefined patterns in his mind based on his own experiences and training, and then he refers to the default models for understanding the new events thus according to this theory, if the primary patterns that are formed on the basis of his personality and the social culture and training policies, will be deviated from the facts. Then this deviation from the right understanding of the truth continues and leads to ruin his fate. But almost any wise person can learn from the wrong patterns by using his instinct abilities and logical perception, and during a learning process, he always seeks to understand the correct perception of each event so that at least makes the wrong decisions consciously. As a result, he will have a new perception of new events in the nature that this new pattern will be added to his default patterns.

The most important reason for using pattern recognition methods is the existence of big data, otherwise, the small size of gathered data can be analyzed using simple statistical methods. But the most important weakness of the pattern recognition methods can be the existence of big data because in some cases, most of the data are not

precise due to huge data sampling. Also, these data may be collected under completely different conditions, and their analysis will also lead to a false conclusion. For example, if we want to analyze data of human behavior or social trends for decision making about long term policies, the results of this analysis will not always be reliable due to differences in the essence of human nature and their complex behavior. Also, the gathered data may not contain any useful information when data is gathered at the time of disorder in the society when every available information will be deliberately adjusted and propagated based on predefined scenarios to hide the truth. Even collecting big data is not a reason to increase the accuracy of decisions and gathering less and more accurate data around a specific goal will lead to better results.

One of the issues that is not widely addressed is the identification and analysis of historical patterns. Human history has always included consecutive periods of war and peace. This process is repeated in a specific time periods with a cyclic pattern (Kabiri Naeini M., Owlia M. S. & M. S. Fallahnezhad, 2005) for amount of chaos created in some specific societies. When the disruption in the society increased to an upper level then it is needed to occur some kind of battle or revolution to empty this negative energy. If the source of this negative energy does not identify, then this cyclic pattern continues. Thus, understanding these patterns and recognizing their reasons is very important because in the current world, the balance between the opposing actors is determined by the amount of access to the weapons of mass destruction, which leads to an anomaly in politics and the extreme thoughts of those possessing these weapons can create severe disasters.

In fact, in a logical way, no war should take place unless the radical and irrational approaches are selected by the players. It can be said that these thoughts are deliberately strengthened in the specific historic periods, and they are spreading throughout the world in different forms, while in the reasonable conditions, the results of military confrontations are clear and predictable and it's possible to solve problems based on the equilibrium point of the game before the battles. Usually, in societies where extreme and irrational thoughts are institutionalized, there will be a kind of internal or external disorder in certain periods of time, and the long-term trend of these societies will always be accompanied by a kind of confusion and a rush that this will lead to conflicts.

One of the learning methods is to divide each system into smaller components and continue this process so that the understanding and analysis of the function of each component can be easily accomplished, and then we can redefine the performance of each component in terms of the overall system performance. Therefore, the most important characteristic of each system is its order and balance, so that each component can only operate in a specific framework. For example, if we consider human societies as a system, then the key components of any human society can be religion, government, culture, economy and politics, different races and historical background. It is clear that these components must be in coordination with the other components and if one of the components deviates from the objective, it also affects the others, and in fact all should be designed with a harmonic policy. But the historical facts do not change over time and the virulent points from the past events can be very effective on the balance between components to achieve the objectives. Any try to ignore the history will keep us blind deliberately to continue the deviated part of the history in order to stop us from making long term decisions that are in accordance with the sustainable development of all players. Also, the main role of religion is to expand the morality to protect the poor people of society thus if it operates against its pragmatism responsibility then it may lead to arise new inference about the role of religion.

One of the topics in the pattern recognition is to classify the data into several distinct groups, so that the data inside the group are very similar, while there is little resemblance between the data of the distinct groups. Data classification is in fact one of the methods for extracting knowledge to use the results in order to find the similarity between the data within each group, and if new data are observed then we can predict the category of the new data. For example, to manage human societies, it is usually attempted to divide the community into smaller groups, and for each category, a particular strategy is used so that the management of smaller groups is easily possible and people that are similar fall within the specified class so that they can only breathe in a certain intellectual area.

Of course, if we classify human societies according to common characteristics into different social groups and provide services for each class according to its conditions and needs, this approach can be closer to the concept of social justice, although the classification of the society is apparently not desirable, but almost all illogical policies are shown legitimate based on the enigmatic concepts of justice in human societies.

One of the important issues in identifying patterns is the existence of noise variables. Noises are variables that cause the deviation of the data from the actual value, and it can be generated under random or non-random factors. When the noise is generated under random conditions, it is usually modeled using a normal random variable. However, if the noise has a non-random factor, it is intentionally created by an external tumult factor to distract the subsequent decisions. For example, when opposing competitors have completely different interests in a game then each of the actors strives to shunt others from the actual equilibrium point by producing the wrong data.

So, this policy is used by all actors, and in fact everyone lives in a totally fictitious and fake world. Therefore, any decision made on the basis of available information is a mistake, because the correct information will never be available, and only a small number of actors have access to the accurate information and the rest of the actors will follow their decisions.

Also, the presence of noise causes that the results of pattern recognition in the behavior of data to be disrupted. For example, the correct behavior pattern may be classified as a false pattern or vice versa. Mistaken decisions in the classification of patterns, if not correctly identified, can lead to a permanent policy and habit. That's why the most actors will play around an incorrect equilibrium point, which simply can be changed by the other players.

Even if we accurately review the human history, we find out that historical events are occurring approximately according to a certain pattern, and a systematic order is hidden over all events in the world. Although many events occur randomly but the overall trend of incidents has been in accordance with a fixed pattern. What is to be seen is that at first, misconceptions and false attitudes occur in a part of human societies, then these beliefs become powerful over time and spread because the purpose of creating misunderstandings in human societies is merely the acquisition of power. Indeed, this expansion will destroy them, because wrong beliefs cannot create unity and loyalty, and usually treaties are expedient and based on short-term benefits. In fact, their internal disorder rises without creating a new order. Thus, the wrong belief paths are an infinite path and will never lead to a lasting new order.

It should be noted that the source of creating wrong beliefs among humans can be a ruthless and intelligent force, and perhaps ignoring this oppression for mankind has brought human history to an endless obliquity with many disasters and perhaps human rebellion has led to such endless oppression.

One of the methods for pattern recognition is the use of features. In fact, we can determine, by computing these features for each new data that this data belongs to which category (Iman Foroutan & Jack Sklansky, 1987; Isabelle Guyon Clopinet & André Elisseeff, 2003). This approach can also be implemented for the management of the human societies. In fact, if the feature system is designed for a standard society, then by computing these characteristics we could analyze the current state of the society. In this case, the community-based control system can identify behavioral patterns in a society that can lead to harm. This process can be implemented based on performance criteria of the community, such as the type and amount of non-controlling behaviors and the people's attitudes toward the life in order to prevent any anomaly.

Also, when information and behavioral data of a society changes, we can simply identify the new position according to the values of features and design appropriate policies and establish a new equilibrium point for the whole system based on the facts, which leads to a new order but it should be noted that the use of features does not result in perfect diagnostic power and we may be mistaken in identifying behaviors in the community because human societies are formed based on the thoughts and human thought can be very complex and subtle. For example, we still do not know the facts and reasons about the important events in the human history and available data seems to be wrong or deliberately deviated. In fact, the root cause of all key events that have changed the human history has been an eternal secret and there is no cogent answer to justify the facts of brutal wars caused huge alteration of history. Although there are very delicate symptoms to understand the facts of history. (For example, the vague part of the history is that sometimes those who are the heirs of the saint people are in fact a symbol of suffering and sacrilege).

Also, it is possible that the incorrect information is given to the diagnostic system based on the features, which will result in a false conclusion. Therefore, other complex strategies will be needed to see the actual state of the system based on the feedback received from the system in order to identify the seemingly legitimate and insignificant but complex thoughts and behaviors to protect the equilibrium point among all players.

One of the important criteria for evaluating the performance of pattern recognition method is the cost and risk. It is important to know the accuracy and cost of applied method to identify patterns and the risk of misclassification. So, if we want to manage the behavior and thoughts in a society, we need to design a system that can analyze and identify different patterns at an affordable cost, and also with sufficient accuracy, so that the correct pattern is not classified as wrong one or vice versa because such a mistake will lead to permanent deviation in the social behavior and even in the history. But if we analyze the hidden attitudes of people in the human societies, we find out that part of society lives in absolute darkness, and they only receive the wrong patterns of thinking. This policy can only have economic or political justification because in fact this part of society has been abandoned and it only requires strict and violent laws to control them, and it is easy to instruct them wrong and superstitious thoughts. But if we want to manage human societies based on human justice and dignity, then not only the correct patterns of living should be properly created, but also the wrong patterns should be identified, and the community should receive the necessary warnings about their situation and threats.

Also, a suitable ethical behavior in society can be considered as unacceptable, but it can be accepted in another

society, while the entity of morality is based on nature and instinct that is common among all human beings. Perhaps this is because of the change in a system that is in equilibrium, even if the equilibrium is fake and incomplete, thus they are resisting to any changes in the society, especially if the elites of the society refuse to accept the truth for some personal reasons and the other people in general can have an impact on the society only by imitating and adhering the elites, so morality in these societies will cause many problems unless there are other values and goals for the individual. Maybe it can be concluded that the life based on traditional saint concepts is not defined in the current order of human societies and it may be considered as an anomaly and in fact it will not be accepted by people in the society because such people cannot accept imperfect and enigmatic inference as an ideology of life.

Another important factor in identifying a pattern is the existence of a correlation and auto-correlation between the data. For example, an abnormality can be observed in the behavior of the society, while this anomaly is based on other factors that may be hidden, and the abnormalities may increase rapidly due to auto-correlation but no particular reason is observed, and it may be possible that the reason for this abnormality will be designed such that no one can believe it. In fact, such hidden reason for anomaly has to constantly create a disorder in society so that people cannot comprehend complex anomaly in the behavioral patterns. Thus, when the people can perceive the depth of this deliberate chaos then it may lead to a real disaster.

Of course, this complex policy will lead to a complex order, and in fact this policy is in a form of a bold strategy in order to prevent future crises.

But usually, bold strategies are less likely to succeed, and can only be used in critical situations. Also, the use of bold policies in social problems will always be accompanied by unpredictable risks, which in some cases will lead to deep social crisis due to the complexity of social relationships.

2. New Insights into Social Behavior

If we want to analyze a person as a single system, whatever he does and whatever he says and every effect that he has on the world and the others, it is a kind of data production, and if this information is continually integrated into a machine learning model like Bayesian thinking, then his human behavior pattern will be obtained. Using this pattern, we can predict his future thinking and when any information outside of the resulting pattern will be observed, we can consider them as alarm data in order to examine the details and results of these alarms. Also, by combining this pattern with a Bayesian network, we can analyze the behavior of the whole community. Although building such a network is complicated and impractical but building such model can be justified in sensitive situations.

The common pattern of behavior that is almost universally accepted is that every human being will be the slave of his own mistakes, which allows the others to trample him and to ruin his fate, but it can be said that suffering in the present world is not a sufficient criterion for ultimate destiny of man because the mistakes usually occur due to wrong perception thus they should be judged only by the God who is almighty for human to save him, and perhaps the important criterion is the moral mistakes and the sins committed by him that leads to damage and the deviation of the divine law that can lead to ruin his destiny and will be forgotten by God.

In the current world, we are faced with people who live in extreme situations due to wrong patterns or psychological damages, so that some of them cannot understand their disastrous situation and they continue in the wrong and sad way blindly, and some others can understand their own deterioration, but they cannot find a solution for themselves and they cannot even express their feelings, or successful people who have a completely pleasant behavior for everyone, but cannot even understand their own human nature. The analysis of these behavioral patterns is necessary in order to understand the bitter realities and facts of social life in the society over the time because what happens is the result of seed that has been planted many years ago, and all disasters happen based on certain ordered events, and this is the reason that why it may be possible to predict the future of human societies in general.

Unfortunately, victims of misleading patterns of life will not receive any help and will usually be rejected and abandoned as a criminal offender, and even their ruined life pattern will be an unimportant subject for the responsible authorities, without having any sense of responsibility or even sympathy with these victims. These people live in their dark world due to the mistake and misleading of related social organizations and their life path will continue to be rapidly eradicated. But perhaps they can only rely on God to find their way to achieve a dignified life but there will be certainly endless suffering along with them, because the character and nature of these people are not often formed, and they will have no idea about the values of their humanity.

Probably every human can design complex and intelligent defense mechanisms for himself based on the science and experience and logic and their character and environment. For example, if life is full of stress and problems, they can define a framework in the form of a complex thinking system based on the concept of the chaos theory (Fallahnezhad M. S., 2018) that any anomaly can improve the human inference. In fact, any problem and

disorder will occur based on a certain order and ultimately, everyone occur in order to create a new human or a new world and the task of man is only to understand and perceive the depth of this dreadful complication governing on some societies.

The concept of justice right now is that a person can understand the concept of injustice, otherwise he will not have any justice, while the world is formed based on the law of justice, and if any one does not accept the laws of nature, then he will be the victim of the nature game.

But if, in a human society, anyone cannot understand the concept of God's justice, he may destroy the society structure for his vile and evil thoughts. The poor people, who do not have the help of anyone except God, are suffering because of the wrong beliefs.

3. Conclusion

In this technical note, some techniques of pattern recognition are adapted with some problems in social science. In general, it is confirmed that the main responsibility of all prophets is to learn that God is sufficient to guide man. This simple fact can form a pattern for human thinking, so that people will try to know their conscience and self-awareness in order to rely on an infinite force so they may be successful to manage their fate, although it is not an easy subject. Of course, the human is so complex and subtle that he cannot predict his future, and concepts that are formed in the human mind may be based on the combination of wrong and correct patterns and they are combined in such a way that the error diagnostic is not simply possible.

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