

## Research Article

# Prediction Analysis of College Teachers' Happiness Based on the Graph Convolutional Network

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College teachers are the source of creativity in the education system, and the happiness of college teachers can be fully ensured in order to cultivate better talents. To address the current problem that the trend of happiness of college teachers is unclear and the direction of enhancing happiness is unknown. We propose a method to predict the happiness of university teachers based on a graph convolution framework. We conduct a comprehensive analysis of teachers' happiness factors in terms of academic innovation, job satisfaction, and student training rate to achieve a trend prediction of teachers' happiness and provide a clear direction for improving happiness. We use the graph convolution structure to input the happiness factors as graph nodes into the graph convolution layer. We attach a sparse layer to the temporal convolution structure to obtain the time-scale information of happiness factor nodes in different research cycles. Finally, we cooperate with an e-commerce platform and use mobile app data as the feedback experimental database. The experimental results show that teachers with different years of experience perceive different levels of happiness factors, and different emotional stimuli also affect teachers' perceptions of happiness.

## 1. Introduction

The happiness of teachers in colleges and universities is determined by three aspects: the teachers themselves, the school, and the society. The psychological definition of happiness is the coexistence of survival and needs. From the initial level of biological instincts, survival can bring people the greatest degree of happiness, and, to survive, various needs need to be satisfied, such as the four aspects of food, clothing, housing, and transportation. After satisfying the needs of food, clothing, shelter, and transportation, one can get more than 60% of the happiness index, because the basic conditions of human survival are satisfied [1]. In addition to the basic survival conditions, the remaining 40% of happiness varies from person to person. Some happiness comes from family, some happiness comes from a career, some happiness comes from the degree of contribution to society, and some happiness comes from interpersonal communication. Therefore, for the study of the happiness of teachers in colleges and universities, we need to recognize the effective factors of the needs of teachers in colleges and universities [2, 3].

As an important indicator of psychological assessment of individual-environment dependence, the focus of well-being is not confined to the health status of the physical body itself, such as anxiety, depression, and autism. A large number of occupancy analyses have been conducted on the positive effects of people and their environment, and such an analysis method can enhance the assessment of the quality-of-life rating and explore the positive potential of people and their environment [4]. In his study on the coexistence of human and social happiness, Bradburn, a well-known psychologist, refers to the definition of individual happiness and related influences. In his definition of happiness, it is pointed out that polar human emotions exist independently, and positive emotions bring more happiness from an objective point of view, but too many positive emotions can also produce complacency in the human spirit [5]. Negative emotions are, generally speaking, a minus point for happiness, but appropriate negative emotions stimulate the human spirit and contribute to an increase in happiness, and too much negative emotion is an extremely serious mental internal drain. Psychologists refer to the influence of psychotherapy

on happiness among the influences on happiness, preventing a large number of negative emotions from affecting the overall happiness between a person and his or her environment. There is also a means to prevent negativity, and actively exploring the positive elements in the environment and experiencing happiness and satisfaction from the environment is the best way to enhance the sense of closeness between a person and the environment [6–8].

In our research on a large amount of research literature related to happiness, some researchers propose upgrading the judgment of happiness to a three-stage indicator. The first stage is the frequency and degree of positive and negative emotions, the second stage is the degree of satisfaction with the surrounding environment within a fixed period, and the third stage is the degree of social need for the individual and the degree to which the individual feels needed. Therefore, happiness is a comprehensive judgment index, and simple emotional happiness does not mean that a person has a high sense of happiness but maybe because the person has a more optimistic attitude towards life [9]. As an important profession in society, teachers in higher education are responsible for transmitting technology, spreading culture, shaping values, and building the future, and their happiness has a direct impact on the quality of the next generation. By giving teachers a high level of happiness, we can cultivate a happier future and create a happier social environment. Therefore, the happiness of college teachers is an important member of the national education system [10]. According to the current research on the happiness of college teachers, we found that several factors affect the happiness of college teachers. The first aspect is the quality of life and living environment of college teachers. The second aspect is the degree of research support for college teachers. The third aspect is the degree of closeness between students of college teachers. The fourth aspect is the rate of job promotion of college teachers. The improvement of life quality and environment is directly related to the problem of survival and accounts for 60% of the influencing factors of the happiness index. Universities should take into account the teachers' self-will and other faculty members' decisions when improving the living environment of teachers. Besides, faculty members' satisfaction with their work and work pressure needs to be taken into account, fully regulating staff's dissatisfaction disputes, giving more freedom of work to faculty members on a legal, reasonable, and fair level, improving teachers' job satisfaction, and making them realize their value and meaning in their work, thus indirectly improving teachers' happiness [11].

To address the current problem that the trend of happiness of college teachers is unclear and the direction of enhancing happiness is unknown, we propose a method to predict the happiness of university teachers based on a graph convolution framework. We conduct a comprehensive analysis of teachers' happiness factors in terms of academic innovation, job satisfaction, and student training rate to achieve a trend prediction of teachers' happiness and provide a clear direction for improving happiness. We use the graph convolution structure to input the happiness factors as graph nodes into the graph convolution layer. Then we

attach a sparse layer to the temporal convolution layer to obtain the time-scale information of happiness factor nodes in different research cycles. Finally, we cooperate with an e-commerce platform and use mobile app data as the feedback experimental database.

The rest of this study is organized as follows. Section 2 describes research related to teacher well-being. Section 3 introduces the detailed process of the analysis and prediction of college teachers' well-being based on graph convolutional networks. Section 4 introduces the experimental datasets and results. Finally, Section 5 presents the shortcomings of this study and suggests directions for further research.

## 2. Related Work

Teachers in higher education are catalysts of innovative change and they have a high degree of foresight in guiding their students in science and technology. They can stimulate students to see both sides of new things from an objective perspective while fostering creative thinking and urging them to learn self-management and critical thinking creativity [12]. In the current context of higher education, which is fully supported by both society and the state, the usefulness of college teachers has been further highlighted. Literature [13] discursively and objectively analyzed the ability of college teachers to perceive well-being at three levels. The first level is what is the most self-innovative insight of college teachers in the process of developing students' creative abilities. The second level is what aspects of happiness, fulfillment, and contribution of college teachers in their teaching and research work are most important in their work. The third level is what aspects of achievement are more important in the perception of happiness for college teachers who have worked for more than 10 years and those who have worked for less than 10 years. Regarding the first level of well-being research, researchers in literature [14] reviewed the theory of well-being and included academic innovativeness among the weighting factors of well-being, and the researcher proposed that college teachers should make the development of students' innovativeness the mainline of teaching well-being, share their experiences and experiences in the curriculum, and guide students to embark on a disciplined innovation path that, to contribute to the country and society while enabling students to persevere in the face of incorrectness and even criticism [15], teachers need to convey their enthusiasm for innovation to students through the flow of emotions. Researchers in literature [16] believe that the creative characteristics of college teachers can be reflected sideways through happiness and that fostering students' academic innovation is deep attainment in attitude and ethics, which is a kind of ideological height. Teacher happiness can also be reflected in academic ethics and influencing students in academics through their academic ethics accumulated over the years constraint, which can enable college teachers to gain great support for their happiness in the academic environment. Researchers in literature [17] point out that the happiness of college teachers has been gradually declining in recent years in terms of the development of student's creative abilities. The

reason for this is the weakening of creativity theory and the decline in teacher efficacy, and these effects are further examined and attributed to the impact on the teacher's research environment. Literature [18] provides a detailed examination of the self-innovation efficacy of college teachers, which is a more in-depth study of teacher well-being. Researchers in literature [19] proposed the concept of teacher creativity, which maps the composition and enhancement strategies of teachers' well-being from the perspective of students' well-being. Literature [20] proposed a novel model of teaching and learning in which researchers' teaching experiences combined with innovation theory provide a unique teaching template for teachers who specialize in subject education. The experienced senior professors' perception of well-being is more open, and they retain an open conception of academic ethics and multi-dimensional ideas of creativity which stem from the first level of well-being.

Regarding the second level of research on the happiness of college teachers, literature [21] was analyzed from a psychological perspective by researchers who experimented to verify the relationship between a positive mindset and happiness. In a year-long experiment, the results were recorded through interviews with college teachers, where the positive mindset was set to include emotions such as pride, joy, and enjoyment. Achieving a positive mindset by temporarily broadening psychological expectations is a manual intervention and a control variable method. Positive emotional interventions can promote positive interactions with the environment, discover more details of life, and increase not only intimacy with friends through sharing but also happiness with the environment. Researchers in literature [22] argued that college teachers who want to enhance social well-being through personal behaviors that lead to new learning experiences and access to new academic resources will have a lasting job and that positive emotions are limited, and the limits of the resilience provided by this positive emotion will shrink further as stress increases in all areas. More effective coping skills should be prepared at this time, and all coping methods should be based on specific patterns of thinking, starting from the level of well-being acquisition. In literature [23] researchers proposed some mathematical-statistical methods to predict the trend between happiness and self-innovation efficacy. The experimental results proved the efficiency of the mathematical method. Literature [24] again verified the positive relationship between happiness and self-innovation efficacy based on the former and further tested the mathematical relationship between happiness, academic innovation personality, and self-innovation efficacy through experiments. These provide a solid research foundation for the second level of well-being.

Regarding the third level of research on the well-being of college teachers, researchers in literature [25] focused on the role of teachers in their teaching careers, calling for the discovery of creative behaviors in academics and the transfer of the well-being generated in academics to classroom education. Researchers in literature [26] argued that university teachers need appropriate stimulation in their teaching endeavors to stimulate greater research output and

contribution as a way to enhance well-being. Literature [27] proposed a semisupervised learning approach aimed at promoting teachers to use flexible time and teaching methods that fully respect students' perspectives within their areas of expertise, and the findings suggest that such teaching methods help to increase student-teacher interaction, foster stronger teacher-student relationships, and enhance the greater teacher-student level of well-being. Researchers in literature [20] have proposed an adaptive well-being analysis approach, where teachers need to be flexible in their professionalism and creativity in multiple scenarios, which requires a certain level of teaching experience, and through their experimental results found that teaching experience is directly proportional to teaching effectiveness, and teachers who are experienced in teaching are more comfortable with contextualized teaching and innovation and have a higher degree of control over the classroom and students. The authors in literature [18] suggested in their study that some of the influences on well-being stem from teachers' self-innovation efficacy. The assessment of teachers' self-innovation efficacy allows for the prediction of the level of well-being. Literature [28] deepened the prediction method of happiness based on the former, by laying out the influencing factors in a neural network and achieving the prediction of the degree of happiness through the autonomous learning of the neural network.

### 3. Method

*3.1. Mathematical Principles.* In this study, to build a happiness prediction system, we try to model the mapping relationship of happiness influence factors using a graph convolutional network. The underlying structure of the graph convolutional network is shown in Figure 1. We adopt the graph convolutional network because we want to encode the influencing factors of happiness as a sequence of graph nodes with the help of its network feature extraction, and we consider the spatial association between the happiness factor nodes as the difference between different people and the temporal association as the investigation period of happiness. The input of the graph convolutional network is a series of CSV files, and every dataset includes details on the time point of the happiness survey, teaching experience, academic achievement, social contribution, classroom feedback, number of family members, and self-innovation ability. Using the computation of the graph convolutional network can achieve a comprehensive parsing of data for each set of happiness factor data, and each happiness factor can be considered to be selected to map to each graph node unit of the graph convolutional layer to construct the peripheral limits of the neural network. In other words, the happiness factor vector belongs to the two-dimensional pixel pattern, which is the same as the input feature vector pattern of the network of the graph convolutional neural. To capture a broader level of happiness factor features and further analyze the mapping relationships of each factor, we stack the deep network and then return all the outputs in parallel to the next layer of the fuser.

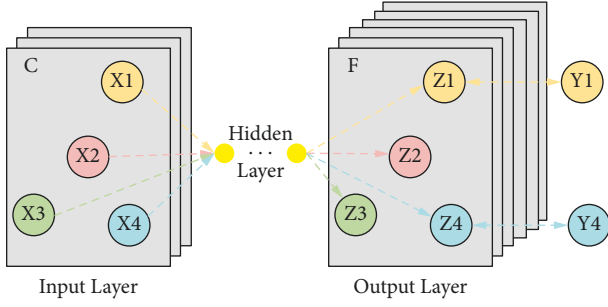


FIGURE 1: Graph convolutional network infrastructure.

The input vector is a predefined array of well-being factors, and suppose that  $T$  denotes the total set sequence of well-being factors,  $V$  denotes the amount of well-being factor classifications, and  $G = (N, E)$  denotes the set of constructed well-being factor arrays, where  $N = \{v_{ti} | i = 1, \dots, T, i = 1, \dots, V\}$  is obtained by traversing all time series of well-being factors together and  $v_{ti}$  represents the total set of happiness factor nodes.  $E$  represents the total set sum of branching nodes.  $E$  consists of  $E_T$  and  $E_S$ . For any happiness factor node  $(i, j)$ ,  $E_s = \{(v_{ti}, v_{tj}) | i, j = 1, \dots, V, t = 1, \dots, T\}$  represents the combination of the mapping between the specified happiness factor and the neighboring nodes at time  $t$ . The connected subset  $E_S$  within the happiness factor nodes is normalized to  $K$  separate regions in the happiness factor mapping and  $\tilde{A}_k \in \{0, 1\}^{V \times V}$  is used to represent the way the nodes are encoded to each other.  $E_T = \{(v_{ti}, v_{tj}) | i, j = 1, \dots, V, t = 1, \dots, T\}$  represents the permutation of happiness factors in different regions in the time dimension. The fusion of features between happy factor neighbors nodes can facilitate the dimensional expansion of the sequence graph convolution and increase the inclusiveness between node features.

Researchers in literature [29] proposed a spatial convolution optimization scheme that can effectively improve the extraction efficiency of spatial features by graph convolution nodes, and the detailed mathematical expressions are

$$\begin{aligned} f_{\text{out}} &= \sum_k^{K_s} (f_{\text{in}} A_k) W_k, \\ A_k &= D_k^{-1/2} (\tilde{A}_k + I) D_k^{-1/2}, \\ D_{ii} &= \sum_k^{K_s} (\tilde{A}_k^{ij} + I_{ij}), \end{aligned} \quad (1)$$

where  $\tilde{A}_s$  represents the feature connectivity operation between the neighboring nodes of the happiness factor,  $I$  represents the unit matrix,  $K_s$  represents the feature scale of the happiness factor nodes in the space, and  $W_k$  indicates the model parameters. The temporal convolution layer scales as  $1 \times K_t$ . In the happy factor node graph convolution, the neighboring node graph convolution sequence is  $(C_{\text{in}}, V, T)$  in dimension  $(V, T)$ , where  $K_t$  represents the association period per unit time of the well-being factor.

Researchers in literature [30] exploring the scale adaptation of graph convolution found that the predefined

adjacency matrix is able to constrain the way the features are mapped between neighboring nodes, and its mathematical equation is

$$f_{\text{out}} = \sum_k^{K_s} f_{\text{in}} (A_k + B_k + C_k) W_k, \quad (2)$$

where  $B_k$  denotes the learning parameters of the feature mapping of the happy factor neighbor nodes and  $C_k$  denotes the confirmation method of the central neighbor nodes, which is mainly calculated by the similarity function.

**3.2. Fusion Strategy.** To achieve feature sharing between happiness factor nodes and branch nodes, we spread the happiness factors as nodes in a graph convolutional network with adaptive structural extensions in each layer of the convolutional structure. In the structure extension optimization, we are inspired by the sparse structured network proposed by Google. We balance the node variability among happiness factors by sparse structure, placing high-level features in branch nodes and low-level features in trunk nodes, and constructing local feature sharing domains through adjacency connections between nodes. Each feature sharing domain can generate a large number of node samples, which are arranged in Euclidean space in topological order, and, according to the differences in topological angles, we can then filter some false samples that do not meet the requirements. When all samples are considered as a space, each sample is combined in the space as a vector of different sequences. The detailed network structure is shown in Figure 2. The number of matching nodes and the convolution sum cannot be calculated exactly when obtaining individual node features, so we propose a multivariate graph node sharing strategy.

The multivariate graph node coexistence strategy enables each branch happiness factor node to share the same set of the same topology matrices, and, in the global node sample feature feedback, all happiness factor nodes and branches present different linear expressions. Take specifying the same type of happiness factor nodes as an example, assuming that the specified type contains 20 happiness factor nodes. The multivariate graph node module generates a separate tensor for each happiness factor node so that the happiness factor node is aligned with the size of the influence factor category data. Through happiness factor node feature sharing, the graph convolution layer can adaptively learn global features from feature feedback loop units to obtain joint correlation. To effectively reduce the number of parameters, it is achieved by gradually reducing the use of high-order multinomial predictions to obtain high-order features layer by layer.

The advantage of sparse structure is to reduce the number of network parameters while obtaining more information about the happiness factor features. We studied the optimization scheme for inception networks in literature and found that one-dimensional convolution is a better optimization method for neural networks with insufficient neural width, and secondly the method has the effect of dimensionality reduction. The sparse structure is shown in

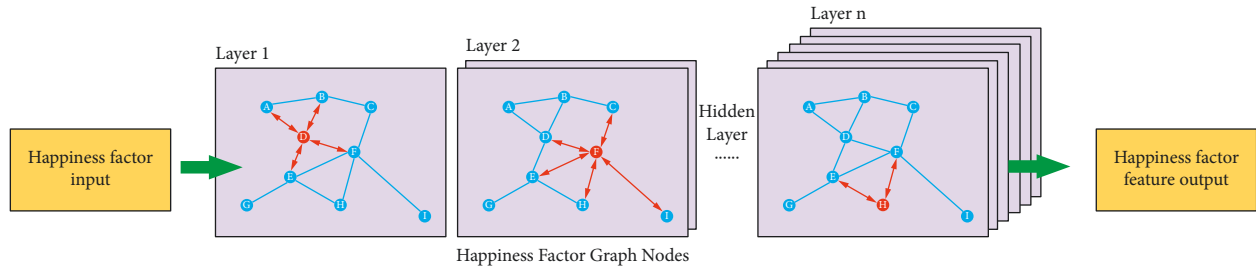


FIGURE 2: Happiness factor multivariate graph node coexistence strategy structure.

Figure 3. In the initial stage of network construction, we add the happiness factor node space mapping path in the temporal convolutional layer and incorporate the optimal path matching algorithm. On the contrary, the layout of the sparse structure is incremental layer by layer, and every layer is prefixed by Conv  $1 \times 1$ . In addition, we reorganize the happiness factor nodes and branches according to the time scale to prevent the mapping error between the sparse structure and the node features. The optimization of the time-level assignment scheme can increase the cross-sectional parameter dimension of the node indices.

According to the principle of layering, the temporal convolutional layer at the end of the network is divided into four branches, each happiness factor node output vector has so corresponding branch type, and its structure is shown in Figure 4. In the initial stage of the node graph network, the network stratification factor  $n = 1$ , the network expansion factor  $d = 4$ , and the graph convolution step  $s = 2$ . In optimizing the structure of the happiness factor node graph network, we increase the network width to obtain additional time-level features, but this structure is prone to the problem of gradient dispersion. For this reason, we propose an initialized network layer parallel structure, which determines the number of initialized network parallelism according to the happiness factor period, and experimentally demonstrate that this method can reduce three-fifths of the network parameters and reduce the computational cost. The classification problem is optimized by adaptively selecting the best feature information using different temporal filters.

### 3.3. Happiness Prediction Graph Convolutional Network.

Based on the data collection and processing of the happiness factor, we found that its data form is very similar to the input of the graph convolutional network, so we used the graph convolutional network as the basis for the happiness prediction of college teachers and added the temporal convolution module. We use preset happiness factor node graphs as constraints to realize the capability of graphs with varying temporal steps to share the common features. Such a network design scheme makes it impossible for the graph task to totally obtain the joint layer of features related to the branch nodes of the regional well-being factor. To optimize this defect, we rely on the happiness factor nodes and branching networks and construct a local feature sharing domain through the internal mapping relationship between nodes. At the early stage of the happiness factor node graph task, the local perceptual domain

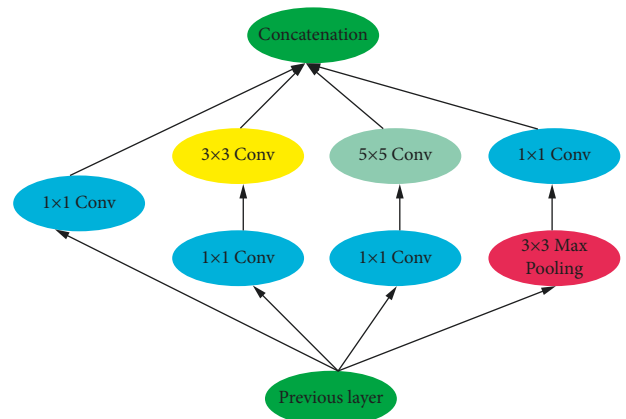


FIGURE 3: Sparse structure.

is computed around the small task to compensate for the omission of the small task features in the early stage in the feedback features of the global information. After reaching the computational constraint value, the local perceptual domain starts to gradually expand the graph task, squarely on the high-level node features, traversing all high-level node features as well as residual features in branch nodes in the form of adjacency matrix. For the feature learning parameter settings, we chose a fixed time scale and a varying spatial scale. For the learned anomalous features, we set automatic screening threshold bounds to prevent the expansion of the network layers from causing a mapping fault between node features and branch features. Consequently, we applied the initial structure to the happiness factor nodes and branches to decrease the number of parameters and improve the generalization and stability of the model.

The network structure of our method for predicting the well-being of college teachers is shown in Figure 5. The data of various happiness influencing factors, such as classroom feedback degree, are first collected from each happiness factor node. Then the happiness factor data are preprocessed to eliminate abnormal data in the analysis process. The happiness factor data of different research cycle time nodes varied greatly. We divided the happiness factor data into teachers with more than 10 years and teachers with less than 10 years of teaching experience. But the datasets of two different stages of teaching experience obeyed random distribution. In the first layer of the node and branching network design, we use a batch normalization module to prevent the imbalance between temporal and spatial level

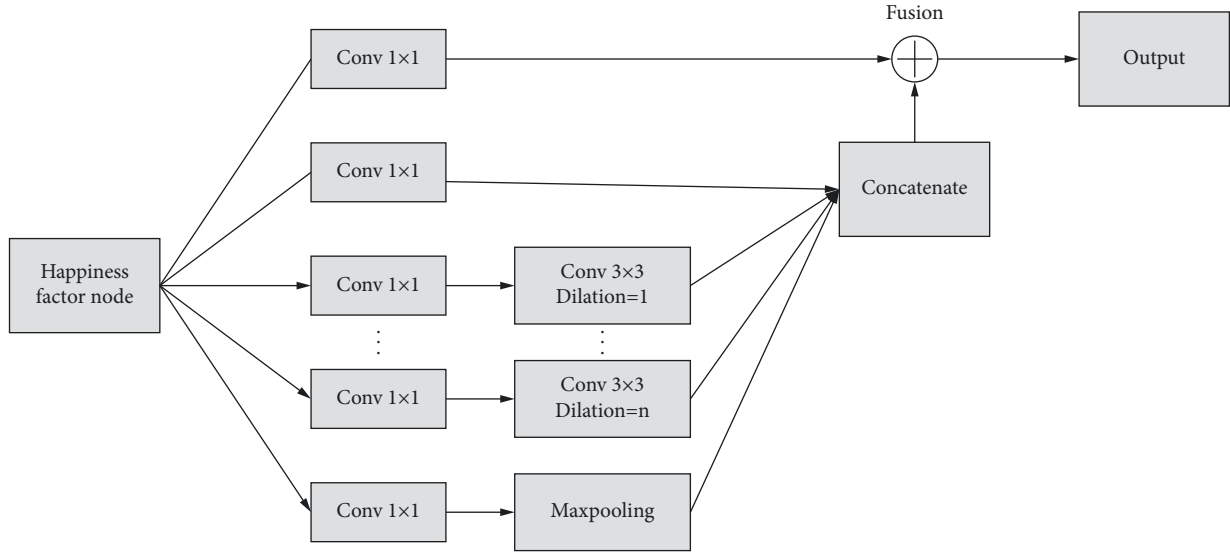


FIGURE 4: Sparse structure temporal convolutional layer.

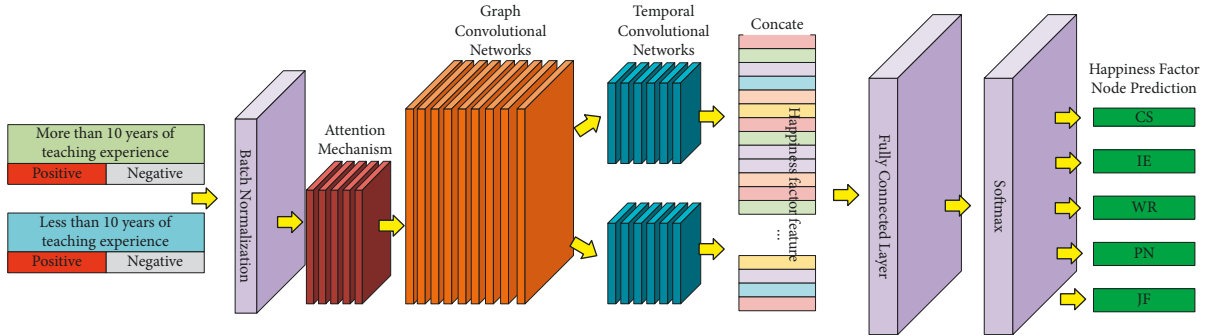


FIGURE 5: Happiness prediction graph convolutional network.

features. Then the convergence of the loss function is improved by reducing the fluctuation of the weight of the happiness factor in the influence factors through normalization. In the next layer of the node and branching network design, we added an attention mechanism to form an inner-loop relationship between feature sharing and feature complementarity between the high-level node features and the low-level node features of the happiness factor with the advantage of the multinode sharing strategy. With the optimization of the sparse structure, the tensor rotation strategy can adaptively invert the tensor information of different features, which improves the model's ability to control the global information. The network is fully obtained and fused by graph feature and then pooled on average, and then the features are classified by a fully connected layer. Finally, the predicted trend of happiness and the maximum influence factor of happiness of college teachers are output according to the classification weights.

## 4. Experiment

**4.1. Datasets.** The data research on the happiness of college teachers is a huge project, and the whole data preparation spanned 6 months, and we followed up and interviewed 102

college teachers. We divided college teachers into two stages. The detailed data information is given in Table 1.

To facilitate continuous information collection, we cooperated with an e-commerce platform, and the daily information feedback from college teachers can be done through the mobile app platform. For the individual college teachers' tracking research, for example, we referred to psychology- and sociology-related literature. With the assistance of professional psychologists, we collected information related to classroom satisfaction (CS), self-innovation effectiveness (IE), workload ratio (WR), number of academic studies published (PN), and job satisfaction feedback (JF) from college teachers. The self-innovation efficacy and academic publication rate were measured on an annual basis, with innovation efficacy being the percentage of actual goals accomplished in a year compared to the expected current rate, as well as academic publication number indicating the number of articles published as a whole year. For the collected data, we preprocessed them according to the experimental requirements and integrated the data in different formats into the same CSV file. Detailed information on the well-being factor data for individual teachers is given in Table 2. The data collected here are the total number of information files generated by a single individual over the entire cycle.

TABLE 1: Teacher happiness datasets.

	2 months	4 months	6 months
More than 10 years	35143	36531	46113
Less than 10 years	30031	41224	49668
Total	65174	77755	95781

TABLE 2: Teacher happiness single group data grouping information.

	CS	IE	WR	PN	JF
Positive	1325	2401	1113	3135	1243
Negative	2304	2310	1676	3112	1475
Mid	1589	2103	1560	2860	1302

TABLE 3: Differences in happiness factors of college teachers in different cycles.

Month	CS		IE		JF	
	>10 years (%)	<10 years (%)	>10 years (%)	<10 years (%)	>10 years (%)	<10 years (%)
1	80	51	89	43	80	45
2	82	68	83	59	81	52
3	83	70	80	68	82	60
4	84	69	91	64	81	61
5	89	75	85	71	85	69
6	85	91	84	88	85	79

TABLE 4: Comparison of the results of the effect of polarity life attitude on the happiness factor.

	WR		PN		TA		PQ	
	>10 years (%)	<10 years (%)	>10 years (%)	<10 years (%)	>10 years (%)	<10 years (%)	>10 years (%)	<10 years (%)
Positive	81	87	92	90	90	80	88	86
Negative	70	58	78	53	80	50	80	67
Mid	75	76	77	75	74	75	76	76

**4.2. Analysis of Experimental Results.** In our experiment, we found that different teachers' well-being factors differed in different cycles, so we subdivided the cycle into one month as this information feedback and tested mainly on classroom satisfaction, self-innovation efficacy, and job satisfaction, and the results of the experiment are given in Table 3.

Based on the experimental results in Table 3, it can be seen that college teachers with more than ten years of teaching experience remained above 80% in classroom satisfaction, self-innovation efficacy, and job satisfaction assessments. Teachers with less than 10 years of teaching experience are in a steady increasing trend in all indicators of well-being factor. These differences are proportional to experience, and the teaching experience of college teachers is a gradual growth process, which grows in the same pattern as happiness, and young teachers need to gradually experiment with how to develop student's abilities in all aspects and how to improve their job happiness. These data can be transferred to other happiness surveys of college teachers through the learning and training of the network of graph convolution.

In addition, we did an experimental validation in terms of life attitudes, and we used manual interventions to keep teachers in positive and negative emotions during some of the phases and collected workload ratio (WR), academic

publication rate (PN), teaching achievement (TA) rate, and periodic psychological quality (PQ) assessment. The results of the experiment are given in Table 4.

The results of the experiments in the above table show that teachers with teaching experience fluctuate less and are more stable under the manual intervention of polarity emotion. Teachers who have worked for less than 10 years showed higher performance in all happiness factor indicators under the stimulation of positive emotions, but, under the influence of negative emotions, the happiness factor dropped sharply with a large gap. The experimental results fully illustrate that polar emotions have a significant effect on the well-being of young teachers who have worked for less than 10 years. These data can be transferred to other happiness surveys of college teachers through the learning and training of the network of graph convolution.

## 5. Conclusion

In this study, we propose an approach for predicting the happiness of university teachers on the basis of the graph convolution framework. We develop a comprehensive analysis of the happiness factors of teachers in terms of academic innovation, job satisfaction, and student training

rate to achieve a trend prediction of teachers' happiness and provide a clear direction for improving it. First, we input the happiness factors as graph nodes into the graph convolution layer using the graph convolution structure and add tensor rotation modules to each layer to obtain the full information of the happiness factor nodes. Then we attach a sparse layer to the time-scale convolution layer to rebuild a multiscale time-scale filter to select the time details of the happiness factor nodes in different research cycles. Finally, we cooperate with an e-commerce platform and use mobile app data as the feedback experimental database. The experimental results show that teachers with different years of experience have different layers of perceptions of the happiness factor, and different emotional stimuli can also influence teachers' perceptions of happiness. Our method achieves the prediction of teachers' happiness and indicates specific directions to improve it.

Through the experiment, it was found that the happiness of teachers who have worked for more than 10 years gradually tended to stabilize. In the next study, we will shift the focus of our research to a more specific analysis of teachers who have worked for less than 10 years. Young teachers represent the direction of teacher development, and only by improving the well-being of young teachers can we ensure a constant flow of creativity in the country's education system.

### Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

### Conflicts of Interest

The author declares that there are no known conflicts of interest.

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