

# A New Approach for Study on Nostalgia Memory Based on Social Media Data

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**Abstract**—In view of the unprecedented nostalgia crisis during the urbanization in China, a new approach to explore nostalgia memory based on social media data was proposed under the background when social media became a new memory mode and carrier. Firstly, the targets of mining were expounded based on the memory theory. A complete homesickness memory can be constructed through the mining and analysis of three components of nostalgia memory: person, place and time. Secondly, the data and spatial analysis methods and techniques were studied by combining with the existing literature and practice research, and the application in nostalgia memory mining was deduced. Finally, the characteristics of social media data different from traditional memory media in subject, content and space-time were put forward, and the opportunities and challenges were also considered.

## 1 Introduction

The rapid urbanization and large-scale migration in China have resulted in the gradual vanishing of rural traditional cultural landscapes and the disappearing of spiritual homes [1], which have enormously impacted village memory. In view of this problem, the 2013 China urbanization working conference proposed the novel urbanization requirement of “allowing residents to see mountains and waters and to reserve nostalgia” [2]. The 2017 Suggestions on Implementation of Chinese Excellent Traditional Culture Inheritance and Development Projects emphasized again “reinforcing beautiful village cultural construction, mining and protecting rural culture resources, and allowing descendants to remember nostalgia” [3]. Thus, the nostalgia demands generated at the new era have been raised to the national level, and conservation and continuation of village memory have become the focus and emphasis of attention. The primary task is how to scientifically and comprehensively understand and mine nostalgia memory, which is the premise of nostalgia reservation and offers a direction and theme for rural planning and development. Along with technological development, the new social media (e.g. Weibo, Wechat) resulting from the digital and Internet eras are reshaping the carriers and contents of nostalgia memory. The pluralistic heterogeneous data (texts, pictures, positions, multimedia) included in social media can offer new clues for mining and research of nostalgia memory. In the existing research, the pictures, texts and other open data in social media (Facebook, Flickr, Weibo, tourism websites) are utilized to study the image perception of

city memory from the aspects of architecture, planning and geography. Based on the continuation and expansion of existing social media data in the image field, this study was aimed to facilitate quantitative and qualitative analysis of this poetic expression -- nostalgia memory.

## 2 Target: nostalgia memory

### 2.1 Nostalgia and memory

Nostalgia and memory are inseparable. The fundamental cause of nostalgia is memory, and the continuation of nostalgia emotion is a preserving and reproducing process of memory [4]. People who are far away from their native villages or notice the immense changes of hometowns will start to memorize their hometowns. They will repeatedly reproduce and preserve wonderful things and scenes, which make nostalgia continue. Moreover, nostalgia is a collective memory. Halbwachs conceptually described ‘collective memory’ for the first time in 1925 as a process and result of sharing past events by the members of a specific social group [5]. He found memory was characteristic of collectivity and any social group and organization in reality had specific collective memory. Nostalgia memory is also a collective memory and is the recalling of shared past events by the social group over a unique place -- villages.

### 2.2 Nostalgia memory during urbanization

‘Nostalgia’ is frequently used in literary works to convey the sentimental attach to the hometowns by people far away. As present, the nostalgia of traditional meaning

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does not express the life circumstances of modern people any more. Nostalgia of the new era in China has resulted from urbanization and been endowed with new connotations by the tremendous changes of social structures. Attendants of the 2014 “China nostalgia and novel urbanization forum” generally admitted that nostalgia of the new era was an experience of exhaust resulting from the intercrossing between the attachment to traditional life patterns and the heavy sensation to current urban life after rural people swarmed into cities [6]. Apparently, nostalgia memory is firstly a phenomenon of emotional sustenance and cultural identification. Secondly, nostalgia (homesickness) is the memory and emotion that can be aroused by specific places, and the ‘sickness’ without ‘home’ has no emotional source [7]. Ruan defined nostalgia from the aspect of architecture as a memory over the material space environment of hometown as well as the worry and memory whether it exists or not [8]. Moreover, the connotations of nostalgia during urbanization also cover the aspect of environment construction and conveys the expectation of building ‘beautiful villages’ while preserving the original environmental identity.

### 2.3 Components of nostalgia memory

Memory is a continuous reconstruction process of interaction between the memory subject and memory object [9] and involves the subject, object and time factors. Together with the connotations of nostalgia during urbanization as mentioned above, memory involves three components: person, place and time.

1) *Person*: The subject of memory is person. According to the group relations and identity composition, the groups of nostalgia memory generated under the background of urbanization can be divided into two types. The first type is the common user groups and includes rural villagers, villagers leaving villages, villagers who have once migrated to cities and later returned to villages, generations who grow up in cities and do not forget elder members and hometowns, and external tourists and in-migrants who have stayed for short time or have chronically resided in villages [10]. The second type is professionals devoted to village research and practice and sharing rural collective memory, and usually includes political power workers, local elite and professional workers [11]. In social media, the first type is usually personal users, while the second type is mainly official users. Owing to the complexity of the memory process, individuals are different in age, gender, education level, social environment and economic conditions and thus possess different emotional and social demands. Thus, the characteristics of memory subjects should be analyzed in concrete studies since their perception experiences are different.

2) *Place*: Place is the object and carrier of memory. The memorizing capacity and habits of people are usually associated with relevant substances, space places and events. Depending on the form differences, the places of nostalgia memory usually include two parts of information: material form and stories [12].

3) The material form is mainly the material space environment of cities-villages and is composed of environmental elements with material traits (form, texture, colors), including artificial and natural factors. Depending on the spatial scales of urbanization, the material-form places can be divided from macroscopy to microscopy into three levels: (1) local regional level (e.g. mountains, waters, towns, villages); (2) public space level (e.g. roads, streets and other line forms; well houses, gardens, squares, docks, theaters and other node space); (3) residence neighborhood level (e.g. house, room, doors, yards). There are also some fragmented microenvironments, such as lover walls [13].

The stories of a specific subject in the space place are the spiritual carrier of nostalgia. These stories are closely related to history, traditions, cultures, nationality and other themes and include not only the macroscopical “large nostalgia” major events in history, but also the microscopic “small nostalgia” daily trifling matters. The characteristics of a place are ascribed to the events that have occurred there ..... and concern the activities at these moments, the people involved in the activities, the special scenarios, and the memory in our life [14]. Apparently, the material space creates a stage for the presence of people and occurrence of stories, while the presence of people and occurrence of stories endow the material space with meanings.

4) *Time*: Time is an important component of nostalgia memory and is associated with both person and place. The emotion of nostalgia is sublimated as time goes by. Firstly, nostalgia emotion, which is closely related with the life cycle of a person, is gradually intensified with the increasing age. Secondly, the specific time contexts of Spring Festival, Qingming, Mid-Autumn Festival and other traditional festivals can arouse the vivid nostalgia emotion [15]. In terms of place, firstly, ‘time’ records the repetition and circulation of personnel affairs transition, production and life, such as the perception of nostalgia through festivals year after year. Secondly, the various material or immaterial elements in the continuous process from origin, development to decay are reserved in the space place in the time axis in the order of occurrence, which allow people to remember the dribs and drabs in the hundred years or even thousand years of village development.

Moreover, timeliness is the fundamentality that memory is different from imagination. Image is only a transient subjective picture or feeling, is only a product, or a part of it, involved in the memory process and belongs to the limited concept of memory [11]. Thus, research on nostalgia memory is a perceiving and reconstructing process of uninterrupted images.

In all, among the components of nostalgia memory, person is the core, place is the base, and time is a prerequisite. These three components are linked together, and mining and analysis by using these three components as concrete targets will allow to extract very complete information of nostalgia.

### 3 Methods: data analysis of social media

Social media is a type of Internet media for content production and content communication among users [16]. Social media data refer to all data generated by users during the operation of social media service platforms, and the data contents include user data, relations among users, information released by users, and interactive activity records among users [17]. The concrete forms include pictures, texts, positions, videos, multimedia and other information, and are featured by high precision, broad coverage, huge quantity, high promptness, and geographical locations. Such forms bring new methods for city research and broaden the clues for mining and research of nostalgia memory. Users on social media can freely express and share their personal experience, feelings and memory, and the interactions among users promote the continuation of memory and are stored, inherited and developed through various data forms. By analyzing the sensor-like data of these potential social groups, researchers can thoroughly and precisely probe into the nostalgia emotion and memory of people [18].

If the data characterized by numbers are called “tabular data”, then the more complex, higher-dimensional and more abstract data represented by pictures and languages in social media are named “notional data”. The former is convenient and efficient in computation, but the latter is richer and more complex in information [19]. “Notional data” are usually processed by content analytical methods, which are a type of research methods for nonsystematic and qualitative symbol-like contents, such as conversion of pictures and texts into systematic and quantitative data [20]. At present, in the field of city research, the content analysis of social media data can be divided by data types into picture analytical technique, text analytical technique, and positional information analytical technique, which are often combined with the space and environmental analysis methods of architecture as well as visualization techniques. In this study based on relevant research techniques, we explored the corresponding concrete analytical clues by combining with the mining targets of nostalgia memory.

#### 3.1 Picture analysis

Pictures are the most-valued data sources on social media and account for large proportions. Compared with traditional data, pictures are featured by large information quantities and visibility and are obviously better for research on nostalgia memory. Pictures involve the material description of functions and forms of the place space, and reflect the activity and place sense of the social space. Moreover, pictures have no language barriers and can be utilized by people from different space-time.

The existing research on picture data is mainly conducted from two aspects, including analysis of picture metadata and labels, and mining of picture contents, and are spatially statistically analyzed by combining with GIS and other space analytical techniques. The picture metadata and label information include place, time and label contents of photographing,

and are often used into space-time distribution analysis of people. For instance, Zhou X L et al. identified and analyzed the space-time information and label information of Flickr pictures, and summarized the space-time distributive laws of multiple purpose cities of tourism [21]. Mining of picture contents is done mainly in characterization of urban image elements. For instance, Long Y et al. proposed the concept of “pictorial urbanism”, introduced the existing picture analysis and visualization tools [19] and applied to study the dominant images, image characteristic degrees, and similarity of 24 cities in China [22]. With the deep learning technique, Liu L et al. mined the massive pictures with geographical indications from 26 cities on Panoramio and Flickr, statistically analyzed the image elements of each city, summarized seven visual image types (green, water, traffic, tall buildings, ancient buildings, social activities, sports), and characterized each type and its spatial distribution [23].

The above methods can be extended to research on nostalgia memory mining. Firstly, together with space analytical techniques, the distributive laws of subjects of memory, and distribution of places associated with nostalgia memory can be analyzed to set up the coordinate system and coordinates of city and village memory. Secondly, with each picture as a data source and according to relevant theories of environment compositional elements from architecture and planning science, the compositions and characteristics of material elements and immaterial elements in places can be identified and analyzed. Thus, the importance of each place element in nostalgia memory can be statistically analyzed by using the quantity and proportions of pictures, which will offer fine data for “beautiful village” construction.

#### 3.2 Text analysis

In addition to pictures, text analysis is another major research method of social media data analysis. Compared with traditional media, information on social media is mostly shared in the form of shorter texts. These shorter texts are featured by mass timeliness, semantic sparsity, irregularity, and the possession of rich themes and emotional information, so text analysis is highly difficult but valuable.

The mostly-used text analytical techniques include word frequency analysis, emotion analysis, social network analysis, and semantic network analysis. For instance, with word frequency analysis, emotion analysis, semantic network analysis and other text analytical methods, Wang and Sun studied the collective memory of traditional villages and probed into the demands of memory subjects through word frequency analysis and classified the emotional inclinations of memory subjects through statistics of emotion words [10]. On this basis, semantic networks were formed on NETDRAW to supplement and validate the emotion characteristics of memory subjects [10]. Liu analyzed the entirety and entity of city memory through word frequency statistics on self-media, and revealed the relations between urban

spaces and the emotional attitudes of people toward city spaces through social network analysis [18].

Apparently, text data analysis on social media is an important supplement to picture analysis, and is mainly used to study the emotion and spiritual levels of people and the characteristics of places, especially immaterial elements. The texts and emotion expressed by memory subjects fully reveal the cultural diversity of different space-time and different memory groups, and can be utilized to precisely determine the personal emotion and environmental socio-cultures involved in nostalgia memory.

### 3.3 Other data analysis

Other data analysis mainly involves user registration information and space-time data. The user registration information directly offers data for research on basic characteristics of memory subjects, including age, gender and region. Based on space-time data, Deng and Tan analyzed the behavioral preferences of Weibo sign-in, and visualized the time characteristics and individual characteristics of Weibo sign-in behaviors in Shenzhen and Hong Kong, which contributed to exploratory research on city images and on city perceptual behaviors of different groups [24]. Similarly, as for nostalgia memory, the characteristics and emotion expressing activities of memory groups can be uncovered by analyzing the quantity, frequency, consecutive sign-in time span, and type preferences from user release or sign-in on social media. The place space related with nostalgia memory can be analyzed from the aspect of release or sign-in places, and the time characteristics of nostalgia memory can be discussed from the time distributive laws of release or sign-in.

In all, the analytical methods of social media data are diverse and gradually developing and updating. Any data analysis method emphasizes differently on excavation of nostalgia memory compositional elements “Table I”. For comprehensive understanding of nostalgia, multiple techniques of a certain data type or integrated application of multiple data types are often adopted.

**TABLE I.** EMPHASIS OF SOCIAL MEDIA DATA ANALYSIS TECHNIQUES

		Person	Place		Time
			Material form	Story	
Picture analysis		△	▲	▲	△
Text analysis		△	△	▲	△
Other data analysis	User information	▲	—	—	△
	Space-time data	▲	△	—	▲

▲ Particularly emphasized; △ Emphasized; — Not emphasized

## 4 Characteristics: nostalgia memory from social media data

Owing to the differences from traditional memory media, the compositional elements of nostalgia memory carried on social media data convey new characteristics, which not only offer an opener space for the recording, storage and inheritance of nostalgia, but also bring uncertainty to nostalgia inheritance.

### 4.1 Alteration of subject

Firstly, common people become the subject of nostalgia memory. French ideologist Jacques Derrida said the memory construction from past to the present is a process of power operation [25]. In the era of traditional media, the discourse power was often grasped by the power elite, but the social common people only played a role of audience. In social media, however, the technical democracy that “anyone can speak” is realized, so collective memory has entered the era of common people writing [26], which means memory will be fresher, more realistic, richer and more complete. The alteration of nostalgia memory subject status in social media has really opened the perspective of “people-oriented” research and has promoted the transition from “material-based urbanization” to “people-based urbanization”.

Secondly, the subject of memory is becoming younger. Due to the space-time limitations, the hard core of memory on traditional media is the middle-aged and old people who stick to villages. In comparison, the major user groups of social media based on Internet and information technology are young people. The 2018 Weibo User Development Report reveals that the largest proportion comes from 23- to 30-year-old users. Hence, the data on social media more reflect the nostalgia memory of young people, who have better recording means and are innovating the aspects of understanding.

### 4.2 Imperfection of contents

The incomparable advantage of social media in information storage facilitates the conservation and continuation of nostalgia memory, but the data fragmentation, snackization, overloading and distortion of data also impact the integrity of information. Firstly, though social media are the platforms for nostalgia expression, the fragmentation and scattering of massive pictures or scraped words on social media complicate the construction of complete collective memory. Secondly, social media easily result in the phenomenon of only recording rather than memory. The landscape pictures and travel notes on social media more reflect the information of input and reservation village places by memory subjects, but do not sublimate to the deep conscious memory of subjects. Moreover, massive information is lost and unnoticed in data oceans, or information overloading has resulted in attentiveness “fatigue”, which together with the distortion of Internet information will make the memory contents incomplete.



### 4.3 Space-time immaterialization

The Internet-based social media have broken through the space-time limitations of memory. At the time dimension, the “real-time” data on social media has extremely “compressed” time, allowing users to express nostalgia emotion in time, but it also attenuates the continuous reproduction and reduces the fascination and cohesiveness of memory. At the space dimension, the territorial scopes of users have been infinitely broadened in social media, and the multicultural cultural exchange has brought chances for rural culture development. However, these subjects are only strangers who contact temporarily, but the lack of cultural identity makes it hard to form a collective memory as solid as that generated in the traditional era. Furthermore, social media not only have broken through geographical frontiers, but also have created a virtual space that permits the absence of memory subjects. When the village environment or story activity on social media is utilized, personal nostalgia of users will be aroused, forming a unique memory way on social media, which makes it possible to arouse the memory of more people.

In all, the unique social media data compensate for the defects of traditional urban research methods in data acquisition, low subjective influence, and non-intuitiveness of results, but nostalgia memory mining on social media is also facing new challenges. Hence, traditional methods still are playing an important role, and the originality and integrity of nostalgia memory will be finally achieved by well combining new data techniques with the traditional analysis methods in architecture and planning science.

## 5 Conclusions

The operability and probable challenges of nostalgia memory research based on mining of social media data were tentatively explored and analyzed by interpreting the concepts and connotations of nostalgia memory and by using the existing theories, methods and practice of urban memory research and social media. In the future, further research and validation will be conducted with more case studies. Nostalgia memory is an evolving and dynamic system and concerns not only the past, but also the future. Activating nostalgia memory with the help of new platform and new technology is an important topic for follow-up research.

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