Constructing a Knowledge Graph of Landscape Poetry from a Digital Humanities Perspective: A Case Study of Parrot Isle Poetry (Postprint)

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Abstract

[Objective/Significance] Introducing landscape imagery into knowledge graph construction in the field of poetry helps to further refine the research granularity of poetry resources in the digital humanities domain and expand the research breadth of digital humanities in the field of poetry. [Method/Process] Focusing on landscape poetry and taking Parrot Isle poetry as a specific case, this study constructs an ontology model and knowledge graph, semantically associates landscape poetry knowledge from multiple dimensions including poetry, landscape, figures, space, time, and events, and utilizes knowledge graph semantic relationship visualization to achieve knowledge discovery research on Parrot Isle poetry. [Result/Conclusion] Through the construction of a landscape poetry knowledge graph, this study not only achieves standardized and systematic organization of poetry content and deeper mining of poetry resource knowledge, but also provides references for the construction of local characteristic resources represented by poetry.

Full Text

Research on the Construction of Knowledge Graph in the Context of Landscape Poem from the Perspective of Digital Humanities: Take Parrot Island Poetry as an Example

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Abstract: [Purpose/significance] Introducing landscape imagery into the field of poetry and constructing a knowledge graph can help refine the granularity of

poem resources in the digital humanities domain while expanding the breadth of digital humanities research in poem. [Method/process] Facing landscape poetry, this paper takes Parrot Island poetry as the specific case object, constructs its ontology model and knowledge graph, semantically correlates landscape poetry knowledge through multiple dimensions such as poetry, landscape, characters, space, time, and events, and visualizes the semantic relationship of knowledge graph, so as to realize the knowledge discovery research of Parrot Island poetry. [Result/conclusion] By conducting empirical research through case studies in this paper, we demonstrate that constructing a knowledge graph for landscape poem not only facilitates the standardized and systematic organization of poem resources but also enables deeper exploration of poem contents. Furthermore, it provides valuable insights for the development of regional distinctive resources, with poem being representative of such resources.

Keywords: Landscape poem; Knowledge graph; Knowledge organization; Knowledge discovery; Digital humanities

1 Research Status

Digital humanities, as an interdisciplinary field bridging digital technology and humanities, has emerged as a prominent research direction both domestically and internationally in recent years. Originating from humanities computing, which employs computational techniques to explore existing humanities questions [**?**], its pioneering work is widely recognized as Busa's compilation of a lexical index for Thomas Aquinas in 1949 [**?**]. In subsequent decades, foreign scholars progressively integrated computer technology with literary studies, art history, historiology, and other humanities disciplines, analyzing vast amounts of textual information through computational methods and continuously transcending disciplinary boundaries, thereby substantially advancing the development of digital humanities. In contrast, domestic digital humanities research started relatively late [**?**]. In 2011, Wuhan University established the first digital humanities research center in mainland China, after which other universities and libraries successively founded digital humanities centers and launched relevant research. In recent years, scholars have conducted a series of beneficial explorations combining digital humanities technology with traditional humanities fields. For instance, Li He et al. [**?**] designed and constructed a knowledge ontology model for bamboo and silk medical literature, subsequently building a knowledge graph and conducting visualization and retrieval research. Zhang Xiangxian et al. [**?**] utilized ontology and knowledge graph technologies to achieve knowledge organization of Dunhuang and Turpan medical documents. Tang Zhengui et al. [**?**] constructed an ancient Chinese time ontology guided by the principle of "refinement" and explored its application framework and scenarios in digital humanities domains represented by ancient book databases. Zhang Qi et al. [**?**] used the *Records of the Grand Historian* as a case study to achieve multidimensional knowledge visualization of historical texts. Cheng Jiejing et

al. [?] took the group of Western Han classical scholars in the *Book of Han· Treatise on Arts and Literature* as research subjects and completed the associative organization of historical materials on figures in ancient books based on ontology construction. Liu Qingtang et al. [?] constructed an intelligent application service system for ethnic instrumental music culture based on knowledge graph technology and developed an instantiation for the Tujia ethnic instrumental music culture intelligent application service system in combination with Tujia folk cultural characteristics. It can be said that in the era of digital intelligence, the rapid development of digital technology has provided new research perspectives and paradigms for humanities disciplines, enabling humanities knowledge to be produced and disseminated in entirely new ways through the empowerment of digital technology.

Chinese classical poetry constitutes an important humanities resource in China, containing and transmitting profound traditional Chinese culture. Some scholars have also conducted research on regional culture in poetry. For example, Lu Xue [?] took Song Dynasty Wuhan poetry as the research object, analyzing the regional culture and characteristics of Wuhan as portrayed in Song Dynasty poetry through an overview of Wuhan poets' works and their writing content. Lu Meng [?] studied the influence of regional culture on Liu Yuxi's poetic creation. Wei Dongzhi [?] conducted research on Yellow Crane Tower-related poetry from the Tang Dynasty, Five Dynasties and Ten Kingdoms period, and Song Dynasty, discussing the imagery expressed in Yellow Crane Tower poetry across different periods and analyzing the reasons for the prosperity of Yellow Crane Tower poetry creation during the Tang and Song dynasties. Zhang Chengzong [?] conducted analytical research on Yellow Crane Tower and Parrot Island poetry from the Tang and Song dynasties in terms of author works, landscape environment, writing forms, and allusion characteristics. Li Yaqiu [?] specifically studied the literary presentation of Parrot Island during the Tang and Song periods, pointing out that Parrot Island poetry and prose authentically restored the island's historical and cultural features from multiple dimensions including bustling markets, beautiful scenery, simple folk customs, and the figure Mi Heng. Through reviewing literature related to regional landscape poetry, it becomes evident that such research lacks holistic and systematic investigation, and few scholars have taken landscape poetry as an object to conduct knowledge organization and knowledge discovery research. Employing digital humanities technology to assist in landscape poetry research can provide new methods for knowledge organization and discovery in this field, thereby offering technical support for deeply revealing the knowledge structure of landscape poetry.

Research on poetry within the digital humanities perspective has become a focus of scholarly attention. To date, domestic research on the digitization and knowledge organization of poetry resources has matured considerably, yielding numerous achievements such as the "China Biographical Database" (CBDB) [?] and the Tang and Song literature platform "Souyun" [?]. In poetry knowledge organization research, Chen Zongliang [?] stored classical poetry in triple format and used this as a data source to construct a knowledge graph, develop-

ing a Chinese classical poetry question-answering system that achieved precise mapping of poetry knowledge reasoning and provided users with more accurate answers. Li Yonghui et al. [**?**] explored knowledge organization and discovery patterns in the poetry domain, achieving knowledge organization, reasoning, and discovery of poetry resources through ontology and knowledge graph construction for Song Dynasty Zhenjiang poetry. Gao Jinsong et al. [**?**] applied ontology and GIS technologies to visualize the spatiotemporal emotional trajectory changes of Li Bai. Zhang Qiang et al. [**?**] conducted visualization research on poets' spatiotemporal emotional trajectories from a multidimensional perspective based on knowledge graph and GIS technologies from a dynamic-static combined viewpoint. With the rise of Artificial Intelligence Generated Content (AIGC), research on automatic generation of classical poetry has also begun to attract attention, such as Liu Jiangfeng et al. [**?**] exploring automatic generation of classical poetry based on the SikuGPT pre-trained model. However, current scholarly efforts in poetry resource knowledge organization have focused more on external structural characteristics, with the granularity of knowledge graph research within the poetry domain still appearing coarse and lacking organization at the level of conceptual connotation and poetry content. Therefore, to refine the research granularity of landscape imagery in classical poetry, this study extends the poetry domain from the content level of landscape, further excavating the knowledge connotation of landscapes and their correlations in poetry. With the aid of knowledge graph technology, this study achieves semantic knowledge organization and visualization presentation, aiming to promote the transformation and upgrading of poetry resource organization research paradigms in the big data environment. By employing digital technology to mine knowledge and value from poetry across multiple dimensions, conduct knowledge discovery and visualization analysis, we can facilitate its dissemination and utilization in the new era.

2 Data Selection and Preprocessing

This study takes Parrot Island landscape poetry as its research object to explore the hidden knowledge and emotions within, and to collect relevant poetry data. The Parrot Island poetry in this study primarily originates from *Parrot Island Gazetteer* compiled by Hu Fengdan in the Qing Dynasty, supplemented by Parrot Island-related poetry retrieved from poetry websites such as Souyun and Gushiwen. According to the research purpose, the criteria for screening and collecting poetry data were set as: (1) poetry describing Parrot Island and its surrounding landscapes; (2) poetry using Parrot Island to mourn Mi Heng. Based on these screening principles, the filtered Parrot Island poetry data was proofread against authoritative printed literature, including *Complete Tang Poems* (published by Zhonghua Book Company), *Complete Song Poems* (published by Peking University Press), *Complete Yuan Poems* (published by Zhonghua Book Company), *Complete Ming Poems* (published by Shanghai Ancient Books Publishing House), and *Compilation of Qing Dynasty Poetry and Prose Collections* (published by Shanghai Ancient Books Publishing House). For figure data, we

primarily utilized the National Library's historical figure database, the Chinese Historical Figure Biography Resource Database, as well as local gazetteers, poet collections, and *Dictionary of Chinese Historical Names* for data collection. All collected data was screened and verified, with irrelevant data deleted and data formats unified to ensure data quality and research value.

Specifically, the collected Parrot Island poetry and related structured data were saved in Excel tables and stored in CSV format. The dataset includes 114 Parrot Island poems with data items including poem ID, title, author, dynasty, full text, annotations, version source, related place names, related figures, and emotional tendency. Figure data is divided into two categories: author data and related figure data. Author data comprises 102 entries with data items including figure ID, name, dynasty, biography, courtesy name, pseudonym, alias, native place, modern native place, related works, birth year, and death year. Related figure data comprises 60 entries, representing figures annotated in the poetry, with the same data items as author data. Related landscapes total 74 entries annotated in Parrot Island poetry content, with specific data items including landscape ID, landscape name, address, introduction, and related information. This data selection and collection work provides concrete instantiation data for subsequent knowledge graph construction and establishes a fundamental data basis for further Parrot Island poetry analysis.

3 Ontology Construction

3.1 Ontology Requirements Analysis

As the foundation for semantic organization of landscape poetry, ontology can provide structured description schemes for both the content and form of landscape poetry resources [**?**]. To enhance interactivity between users and landscape poetry and promote the development and utilization of landscape poetry knowledge, the landscape poetry knowledge ontology should satisfy the following requirements. First, it should enable precise querying of basic information about landscape poetry resources. Landscape poetry resources contain varying information about authors, themes, landscapes, related figures, and related places. Identifying the basic information of landscape poetry resources facilitates targeted retrieval of corresponding information for users and serves as a prerequisite for associating landscape poetry resources with knowledge from other domains. Second, it should enable knowledge retrieval of landscape information embedded in landscape poetry resources. Landscape poetry resources contain rich landscape information, including natural landscapes, cultural landscapes, and landscape imagery. However, some landscapes are not explicitly expressed in the poetry text and require semantic annotation to surface the corresponding landscape information, thereby facilitating user understanding and retrieval of diversified landscape knowledge. Third, it should enable association and mining of relationships between various landscapes and historical culture in landscape poetry resources. Beyond surface-level geographical location information, landscapes contain infinite historical and cultural values, and the associa-

tive relationships between landscapes and related figures warrant researchers' investigation. Achieving semantic association between landscape poetry and historical culture benefits both the popularization of landscape poetry and the promotion of local tourism development.

3.2 Definition of Core Classes and Hierarchical Relationships

This study proposes the concept of landscape poetry, which refers to poetry in which poets use a region's natural or cultural landscapes as a medium to express what they see and feel, emphasizing the spatial and regional attributes of poetry. Therefore, the core elements of landscape poetry in this study include six aspects: landscape poetry, landscape, figure, space, time, and event. The landscape poetry resource ontology model needs to define semantic information for landscape poetry, landscape, figure, time, space, and event. However, given its broad domain coverage and large span, existing general ontology models struggle to describe it accurately. To better construct the landscape poetry ontology model, this study combines existing ontology vocabularies with self-built vocabularies to construct a multi-ontology model.

Through investigation and analysis of landscape poetry resources, we found that existing ontology models cannot fully cover their related content. Therefore, based on underlying controlled vocabularies, we decided to reuse domestic and international general ontologies such as Dublin Core elements (dc), Friend of A Friend vocabulary (foaf), time ontology (time), bibliographic framework (bf), geographic location vocabulary (geo), and Shanghai Library Open Data Platform-related ontologies (shl) [**?**], while constructing self-built vocabularies according to our needs—specifically, using the self-built landscape poetry resource vocabulary Landscape Poem Resources (abbreviated as lpr) as a supplement.

Based on the above analysis, this study defines the core concepts and their hierarchical relationships of the landscape poetry resource ontology at the class level, as shown in [Figure 1: see original paper]. Six classes are established: "LandscapePoem (lpr:LandscapePoem)," "Landscape (lpr:Landscape)," "Person (foaf:Person)," "Location (lpr:Location)," "TemporalEntity (time:TemporalEntity)," and "Event (lpr:Event)." To ensure the granularity of semantic description and the accuracy of concept definition in the ontology model, two subclasses are set at the lower class level under "Landscape" to describe "NaturalLandscape (lpr:NaturalLandscape)" and "HumanLandscape (lpr:HumanLandscape)." Under the "Time" class, "Instant (time:Instant)" and "Interval (time:Interval)" subclasses are established to represent two temporal notation methods. Under the "Event" class, "LegendEvent (lpr:LegendEvent)" and "HistoryEvent (lpr:HistoryEvent)" subclasses are set.

3.3.1 Definition of Properties

The landscape poetry ontology framework composed of concepts alone cannot fully cover the entire domain knowledge, necessitating the addition of data properties and object properties to complete the framework. Data properties are used to explain descriptive information about the class itself, while object properties define various relationships between classes. The domain of data properties is the class, which can be one or multiple classes, and the range is specific data types. The data properties of landscape poetry core concept classes are shown in .

Data Properties of Landscape Poetry

Data Property	Domain	Range
dc:Title	owl:Thing	rdf:PlainLiteral
dc:Identifier	lpr:LandscapePoem, lpr:Landscape, foaf:Person, lpr:Event	rdf:PlainLiteral
dc:Edition	lpr:LandscapePoem	rdf:PlainLiteral
bf:HasAnnotation	lpr:LandscapePoem	rdf:PlainLiteral
lpr:Other_{name}	foaf:Person	rdf:PlainLiteral
lpr:Poem_{content}	lpr:LandscapePoem	rdf:PlainLiteral
lpr:Poem_{type}	lpr:LandscapePoem	rdf:PlainLiteral
lpr:Poem_{translation}	lpr:LandscapePoem	rdf:PlainLiteral
lpr:Poem_{appreciation}	lpr:LandscapePoem	rdf:PlainLiteral
lpr:Poem_{background}	lpr:LandscapePoem	rdf:PlainLiteral
lpr:Emotion_{tendency}	lpr:LandscapePoem	rdf:PlainLiteral
lpr:Landscape_{type}	lpr:Landscape	rdf:PlainLiteral
lpr:Landscape_{description}	lpr:Landscape	rdf:PlainLiteral
lpr:Landscape_{features}	lpr:Landscape	rdf:PlainLiteral
foaf:Gender	foaf:Person	rdf:PlainLiteral
shl:CourtesyName	foaf:Person	rdf:PlainLiteral
shl:Pseudonym	foaf:Person	rdf:PlainLiteral
lpr:Person_{profile}	foaf:Person	rdf:PlainLiteral
lpr:Work	foaf:Person	rdf:PlainLiteral
geo:Long	lpr:Location	rdf:PlainLiteral
geo:Latitude	lpr:Location	rdf:PlainLiteral
shl:Country	lpr:Location	rdf:PlainLiteral
shl:Province	lpr:Location	rdf:PlainLiteral
shl:City	lpr:Location	rdf:PlainLiteral
shl:County	lpr:Location	rdf:PlainLiteral
shl:TemporalValue	time:TemporalEntity	rdf:PlainLiteral
time:InXSDDateTime	time:Instant	rdf:PlainLiteral
lpr:Event_{type}	lpr:Event	rdf:PlainLiteral

Data Property	Domain	Range
lpr:Event_{description}	lpr:Event	rdf:PlainLiteral

Through the establishment of object properties, various attributes of landscape poetry resources are defined and described, enabling the interconnection of entity elements within landscape poetry resources and providing a reference for subsequent internal and external associations. For example, the object property CreatedTime (lpr:CreatedTime) has a domain of LandscapePoem (lpr:LandscapePoem) and a range of Instant (time:Instant), representing the creation time of landscape poetry. The object property RelatedPoem (lpr:RelatedPoem) has both domain and range as LandscapePoem (lpr:LandscapePoem), representing other poetry related to the landscape poetry. The object properties of the landscape poetry ontology are shown in .

Object Properties of Landscape Poetry

Object Property	Domain	Range
lpr:RelatedLandscape	lpr:LandscapePoem	lpr:Landscape
lpr:RelatedPerson	lpr:LandscapePoem	foaf:Person
lpr:RelatedEvent	lpr:LandscapePoem	lpr:Event
lpr:RelatedPoem	lpr:LandscapePoem	lpr:LandscapePoem
bf:Creator	lpr:LandscapePoem	foaf:Person
lpr:CreatedTime	lpr:LandscapePoem	time:Instant
shl:Dynasty	lpr:LandscapePoem	time:Interval
lpr:ContentRelatedPlace	lpr:LandscapePoem	lpr:Location
lpr:CreatedPlace	lpr:LandscapePoem	lpr:Location
lpr:HasLocation	lpr:Landscape	lpr:Location
lpr:OriginTime	lpr:Landscape	time:TemporalEntity
shl:CreatOf	foaf:Person	lpr:LandscapePoem
shl:NativePlace	foaf:Person	lpr:Location
shl:BirthPlace	foaf:Person	lpr:Location
shl:AncestralPlace	foaf:Person	lpr:Location
shl:DeathPlace	foaf:Person	lpr:Location
shl:BurialPlace	foaf:Person	lpr:Location
shl:BirthDay	foaf:Person	time:Instant
shl:DeathDay	foaf:Person	time:Instant
time:IntervalDuring	time:TemporalEntity	time:Interval
lpr:HappenedLocation	lpr:Event	lpr:Location
lpr:HappenedTime	lpr:Event	lpr:TemporalEntity

3.3.2 Instance Import

After completing the construction of the landscape poetry ontology model, the standardized Parrot Island poetry data was imported into Protégé to complete

the ontology construction for Parrot Island poetry. The ontology model visualization using the OntoGraf plugin is shown in [Figure 2: see original paper]. Through Protégé's "individuals" tool, data on Parrot Island poetry, figures, related figures, related landscapes, and spaces from the organized Excel tables were imported to construct an ontology knowledge base within the landscape poetry domain. An instantiation display centered on Parrot Island poetry is shown in [Figure 3: see original paper]. A specific example display using "Gazing at Parrot Island, Lamenting Mi Heng" is shown in [Figure 4: see original paper]. From [Figure 4: see original paper], we can see that the URI label for "Gazing at Parrot Island, Lamenting Mi Heng" is: http://www.semanticweb.org/LandscapePoemResource# 望鸚鵡洲悲祢衡. Its object properties include Dynasty (shl:Dynasty) as Tang Dynasty, Creator (bf:Creator) as poet Li Bai, RelatedLandscape (lpr:RelatedLandscape) including Wujiang River and Parrot Island, and RelatedPerson (lpr:RelatedPerson) including Ji Kang, Xiao Gang, Huang Zu, Sun Deng, Cao Cao, and Mi Heng. Data properties include poem title (dc:Title), annotations (bf:HasAnnotation), version source (dc:Edition), and poem text (lpr:Poem_{content}).

Through ontology model construction, we have completed a semantic knowledge description of landscape poetry from the top level, established relatively strict and standardized settings for its conceptual standards, clarified the architecture of the landscape poetry knowledge concept system, and laid a fundamental conceptual model foundation for subsequent knowledge graph construction research. The reusability and modifiability of the ontology also provide convenience for subsequent updates, iterations, and collaborative sharing.

4 Knowledge Graph Construction and Application

4.1 Data Mapping and Storage

The previous construction of the landscape poetry ontology model generated RDF data. Neo4j stores entities, entity relationships, and attributes of RDF data through nodes and edges, enabling RDF data to be queried more effectively and conveniently. In the ontology, classes are mapped to nodes in the Neo4j knowledge graph, and object properties are mapped to edges representing relationships between different nodes. Due to the traversal characteristics of graph databases, unidirectional relationships between nodes are sufficient. This study implements the mapping of landscape poetry RDF data to a knowledge graph, thereby completing the storage of landscape poetry ontology model data. Ultimately, the constructed landscape poetry knowledge graph includes a total of 659 entity nodes of various types, including landscape poetry, landscapes, figures, locations, time, and events, as well as 1,204 edges representing relationships between various entities. After completing the mapping from the landscape poetry ontology model to the knowledge graph, Cypher language can be used to retrieve and query the landscape poetry knowledge graph. Through the knowledge graph format, mutual association and visualization presentation between landscape poetry resource entities are achieved, with landscape poetry

as the main subject for holistic analysis of its included landscapes, figures, time, events, and locations, providing knowledge services for relevant researchers and local cultural promotion.

4.2 Knowledge Discovery in Parrot Island Poetry

Based on the Neo4j graph database browsing interface, the Parrot Island poetry knowledge graph is visualized. The triple knowledge structure of "node-edge-node" can be directly displayed through the knowledge graph, with nodes interconnected through edges to reveal relationship characteristics between nodes, enabling more comprehensive understanding of the knowledge context within Parrot Island poetry-related entities. Data attribute information of entities can be further presented through single nodes with their specific attribute values. In terms of presentation effects, users can also click on nodes and relationships for personalized settings to meet their habits and needs. Using Cypher statements, knowledge retrieval and discovery research on Parrot Island poetry can be completed through graph traversal, path calculation, and knowledge reasoning. Due to the multidimensional nature of Parrot Island poetry-related knowledge, different dimensions of knowledge discovery results can be formed from different analytical perspectives.

By retrieving Parrot Island poetry creators whose native place is Hangzhou, Zhejiang, as shown in [Figure 5: see original paper], we can obtain information about creators, native places, birth and death years, related Parrot Island poetry, and dynasties. [Figure 5: see original paper] shows that there are two creators from Hangzhou, Zhejiang: Sang Diaoyuan and Yuan Mei, both from the Qing Dynasty. Sang Diaoyuan's Parrot Island poem is "Mourning the Recluse Mi at Parrot Island," born in 1695 and died in 1771. Yuan Mei's Parrot Island poem is "Mi Heng's Tomb," born in 1716 and died in 1797. Associating Parrot Island poetry-related entities through native place can connect scattered nodes, directly displaying Parrot Island poetry-related content associated with ancestral origins and comprehensively obtaining node information on Parrot Island poetry, facilitating multidimensional knowledge discovery of Parrot Island poetry.

Using the query "MATCH (n:Landscape)-[m]-(l:LandscapePoem)-[o]-(p:Person) WHERE n.title='Yellow Crane Tower' RETURN n,m,l,o,p" to query the knowledge graph, we can obtain relationships between Parrot Island poetry and figures related to the Yellow Crane Tower landscape, as shown in [Figure 6: see original paper]. There are 14 Parrot Island poems related to Yellow Crane Tower, such as Jie Xisi's "Dreaming of Wuchang," Liu Taidou's "Autumn Thoughts on the Chu River," and Fang Hongding's "Crossing the River." Among these poems, the most frequently mentioned related figure is Mi Heng, followed by Huang Zu. Fang Yaozhi's "Boating on Parrot Island, Singing to Fellow Travelers" involves the most related figures: Mi Heng, Huang Zu, Huang She, and Li Bai. Retrieving Parrot Island poetry with Yellow Crane Tower as the core can associate seemingly unrelated Parrot Island poems while discovering commonly involved

related figures.

Using the query "MATCH p = allshortestpaths((a:Person{Title:'Li Bai'})-[*..2]-(b:Landscape)) RETURN p" to retrieve the knowledge graph, we can query all related nodes and relationships between the figure "Li Bai" node and landscape nodes at a path distance of 2, as shown in [Figure 7: see original paper]. We can discover that Li Bai's poems "Parrot Island," "Gazing at Parrot Island, Lamenting Mi Heng," and "Presented to Hanyang Assistant Recorder" are related to landscapes including Baqiu, Dabie Mountain, Red Cliff, Dongting Lake, and Qingchuan Pavilion, with the dynasty being Tang. The poems "Boating on Parrot Island, Singing to Fellow Travelers" and "Mooring at Hanyang" both mention Li Bai, making him a related figure for these two works, which involve related landscapes including Qingchuan Pavilion, Junshan, and Yellow Crane Tower. Through the "Li Bai" node, seemingly unrelated and scattered landscapes and poems can be interconnected, demonstrating that the landscape poetry knowledge graph is no longer simply presenting the relationships shown in the graph but can mine deeper semantic information according to reasoning needs, achieving effective knowledge discovery in landscape poetry.

In summary, through visualization display and retrieval of the Parrot Island poetry knowledge graph, this study forms a knowledge network of entity data including poetry, figures, landscapes, spatiotemporal information, and events, thereby mining and extracting implicit knowledge embedded in Parrot Island poetry and empowering knowledge discovery. This transforms static, flat knowledge into a three-dimensional, dynamic knowledge network, ultimately promoting the efficient utilization of landscape poetry from the supply side. Simultaneously, highlighting and showcasing landscapes in landscape poetry helps add historical and cultural connotations to real-world landscapes, providing new organic pathways for empowering the integration of culture and tourism.

This study takes landscape poetry as its research object, deeply mining landscape and related regional characteristics while refining poetry research granularity. Based on ontology and knowledge graph technologies, we reconstructed knowledge of landscape poetry, using Parrot Island poetry as the empirical research subject to achieve visual presentation of the Parrot Island poetry ontology model. Through mapping from ontology to knowledge graph and using the Neo4j graph database to construct the landscape poetry knowledge graph, we holistically and visually presented relationships between Parrot Island poetry and entities such as landscapes, completing knowledge storage and discovery for Parrot Island poetry. Through knowledge discovery analysis of the landscape poetry knowledge graph, we deeply mined relationships between landscape poetry entities, enriched organization methods for landscape poetry resources, and achieved transformation from theory to practice.

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Note: Figure translations are in progress. See original paper for figures.