【Grant-in-Aid for Scientific Research (S)】

Establishment of the Japan Islands Memory Inheritance Model based on Historical Data Sensing

Principal Investigator	The University of Tokyo, Historiographical Institute, Associate Professor YAMADA Taizo　　Researcher Number : 70413937
Project Information	Project Number : 24H00011　　Project Period (FY) : 2024-2028 Keywords : Japanese history, historical material, data infrastructure, data-driven, interdisciplinary fusion

Purpose and Background of the Research

●Outline of the Research

Historical materials are an important resource for elucidating events that occurred in the Japanese Islands. By accumulating, managing, and sharing historical materials as data that can be analyzed across chronological and regional boundaries, we can examine not only political and economic events, but also past events in diverse fields such as disasters, climate, culture, and land use. To make this possible, we will work on the following: (1) the Establishment of "historical data sensing" methods, (2) the Construction of a data-driven analysis infrastructure, and (3) the Formation of an interdisciplinary research environment. Ultimately, we aim to establish a model for inheriting the memory of the Japanese Islands by developing it into a data infrastructure that seamlessly links many fields from the past to the present.

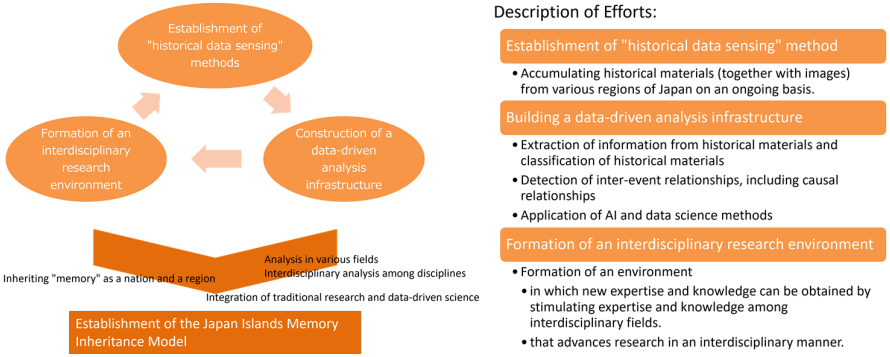

Figure 1. Summary of this study

●Features of this study

By accumulating and managing historical materials as seamless data that can be analyzed from the perspective of crossing chronological and regional boundaries, we believe that it is possible to reconstruct and analyze not only politics and economics, but also the past in a variety of fields, including disasters, climate, culture, landscape, and land use. This study method is nothing other than the implementation of the Japanese history research process in a digital environment, or in other words, the realization of the Japanese history research DX, since the research resources are placed as historical images and the results analyzed from them are also used in a digital environment. It has the potential to create an open research environment in which researchers from other fields can participate, which will allow for active discussion and research development. The data-driven and interdisciplinary analysis of historical materials has led to the development of data based on multiple perspectives, not just images of historical materials, and we believe that this will lead to higher value-added historical materials themselves, and new interdisciplinary research based on research results from interdisciplinary research.

Expected Research Achievements

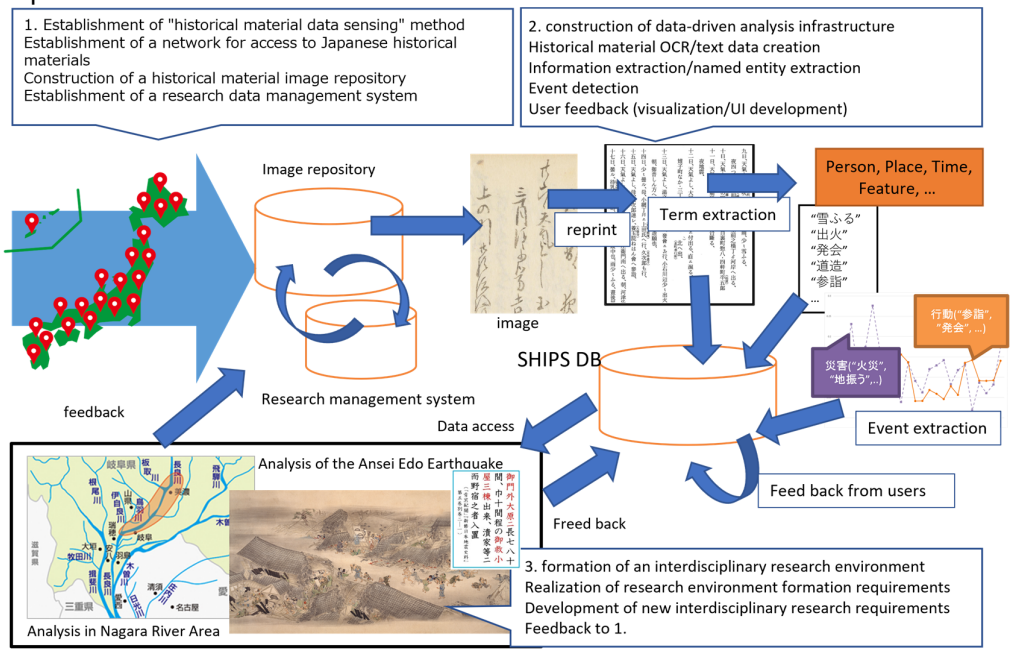

Figure 2. Plan of this study

●Plan (1): Establishment of "historical material data sensing" method

・Establish a "historical material data sensing" method that can collect historical material image data from various regions of Japan one after another, just like data sensing.
・Establishment of a network for access to Japanese historical materials / Construction of a historical material image repository / Establishment of a research data management system (based on the OAIS reference model (an international standard for long-term use and preservation))

●Plan (2): Construction of a data-driven analysis infrastructure

To express the character of historical materials by adding data essential for reading and understanding historical materials, such as text, names of persons, places, and times, to over 20 million historical material images, and correlating the data with events.
・Text creation (OCR for historical materials (with AI-OCR). application of TEI P5 and proposal of tags for Japanese historical materials) / Information extraction and named entity extraction (using deep learning) / Event detection(using topic models (LDA, BERT, …) / Knowledge representation of detected events/ Visualization and UI development and user feedback...

●Plan (3): Formation of an interdisciplinary research environment

・Formation of a research environment that enables the fusion of different disciplines
・Use cases: Use data about cross-regional and cross-temporal data (e.g., historical earthquakes and environmental dynamic analysis).
・Requirements for new interdisciplinary fields: Verification and development of new use cases. Realization of requirements that are indispensable for the formation of interdisciplinary research.
・Realization of a "data fabric for interdisciplinary research": Achievement of enhanced value-added historical material data.

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