Developing a Digital Library of Historical Records in Traditional Mongolian Script

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ABSTRACT

This article discusses the authors’ approach in creating a digital library which can be used to access ancient historical documents written in traditional Mongolian script using a query in modern Mongolian (Cyrillic). They introduce a Traditional Mongolian Script Digital Library (TMSDL), which aims to preserve over 800 years of historical records written in traditional Mongolian for future use and to make them available for public viewing. The authors present their approaches to solve two major problems for realizing such a digital library: 1) accessing ancient documents using a query in modern Mongolian, and 2) rendering traditional Mongolian script properly. They implement an “ancient-to-modern information retrieval” method, which takes into account historical differences in the writing systems of the ancient and modern Mongolian languages. The authors’ results are explored further in the article.

Keywords: Digital Library, Historical Records, Information Retrieval, Information Systems, Library Science, Traditional Mongolian Script

INTRODUCTION

In recent years the role and importance of digital cultural heritage preservation has been increasing in the Asia-Pacific region, as well as worldwide. There has been much advancement in digital library research and development, and the significance of digital library systems that preserve cultural heritage has also increased.

Internationalization and digital cultural heritage preservation worldwide require digital library systems to support various collections in many different languages from different cultures. There is no doubt that if any culture or language is omitted, we as a society would lose parts of our history, language and culture. The Mongols established the largest contiguous land empire in world history, and at that time the ancient Mongol Empire kept its records in traditional script. Considering the importance of long-term accessibility of these linguistic and cultural
records, this paper discusses the creation of a
digital library of Mongolian historical records
written in traditional Mongolian script.

There are over 50,000 catalogued manuscripts
and historical records written in traditional
Mongolian script stored in the National
Library of Mongolia. About 21,100 of them
are handwritten documents and over 9,400 of
those are related to the history of Mongolia. In
addition, many other manuscripts and books are
kept in other countries. Despite the importance
of storing and preserving original historical
materials, the Mongolian climate and storage
facilities are not satisfactory to keep historical
records for long periods of time (Tungalag,
2005). An efficient and effective way to preserve
and protect materials of historical importance
while making them publicly available is to
digitize them and to create a digital library.
Thus we introduce the TMSDL, which aims to
preserve ancient Mongolian historical records.

MONGOLIAN LANGUAGE

Mongolian is spoken by most of the Mongolian
population as well as Inner Mongolians and
other groups of people who live in several
provinces of China and the Russian Federation
(Poppe, 1954). One of the biggest challenges
with the Mongolian language is that Mongoli-
ans have used numerous writing systems,
with traditional Mongolian script being the
most popular and longest-surviving script for
over 800 years. The Mongolian language has
also been written phonetically with Chinese
characters, Square or Phags-pa script, Todo or
Clear script, Soyombo script, Horizontal square
script, Latin, and Cyrillic script (Shagdarsuren,
2001). The traditional Mongolian script is writ-
ten vertically, from top to bottom, in columns
advancing from left to right.

The sounds of words changed as the
Mongolian language evolved, but the spell-
ing remained unchanged. Therefore, there are
sometimes differences between written Mon-

golian and spoken Mongolian. In 1946, the
Cyrillic script was adapted to Mongolian with
the addition of two additional characters, and
Cyrillic became the official Mongolian language
script. At that time, the spelling of modern
Mongolian in the Cyrillic alphabet was based
on the pronunciations in the Khalkha dialect,
the largest Mongol ethnic group (Sečenbagatur,
Tuyag-a, & Ying, 2005; Svantesson, Tsendina,
Karlsson, & Franzén, 2005). This was a radical
change and it separated the Mongolian people
from their culture and historical archives writ-
ten in traditional Mongolian script. Traditional
Mongolian script preserves the ancient language
and reflects the Mongolian language spoken in
the ancient period, while modern Mongolian
reflects the unique pronunciations in modern
dialects.

By the end of the 20th century the tradi-
tional Mongolian script had made an official,
government-decreed return. As a result, modern
Mongolian language has two distinct writing
systems: Cyrillic and traditional Mongolian.
Traditional Mongolian is a distinct dialect
with grammar different from that of modern
Mongolian. Knowing traditional Mongolian
and reading documents in traditional Mongolian
script is becoming equally important consid-
eration for Mongolians as modern Mongolian
in Cyrillic. However using literacy in modern
Mongolian to retrieving information from tradi-
tional Mongolian documents is not a simple task
because the Mongolian language has changed
substantially over time. Having an information
retrieval system that deals with cross-period and
cross-script historical documents has become
an essential demand. We believe the proposed
TMSDL will help users to access materials writ-
ten in traditional Mongolian easily by allowing
modern Mongolian query input.

RELATED WORK

Much research has been conducted in the last
decade on cross-language information retrieval
(CLIR)—a technique to retrieve documents
in one language through a query in another
language. There has been little research on
information retrieval techniques for historical
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