# An Efficient Conversion of EPIGRAPHICAL Textual Image to User Readable Text

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## Abstract

*Epigraphy is the study of inscriptions on rocks, pillars, temple walls, copper plates and other writing material. It is one of the most fascinating and instructive studies. It deals with the art of writing, which distinguishes man from animals and provides us with an instrument for conservation and transmission of historical traditions from generation to generation. Inscriptions are the main source for reconstructing the history and culture of ancient civilizations. It serves as primary documentary evidence to establish legal, socio-cultural, literary, archaeological, and historical antiquity on the basis of engravings. The basic issues caused to the epigraphist are Paleography (letter shapes, direction, and punctuation), Non-standard language (Dialektinschriften etc), Ancient abbreviations, Chronology (ancient dating systems: eponyms, eras etc). Inscriptions are very tough to read by the common people though there is scientific support to such as Petrology and Digital enhancement. To overcome these techniques using natural language processing based on the particular knowledge generator the conversion of ancient ephigraphical text is converted and its efficiency is evaluate according to the performance.*



## 1. Introduction

Fast growth of public photo and video sharing websites such as "Flickr" and "YouTube", provides a huge corpus of unstructured image and video data over the Internet. Searching and retrieving visual information from the Web, however, has been mostly limited to the use of meta-data, user-annotated tags, captions and surrounding text (e.g. the image search engine used by Google).In this paper, we present an image parsing to text description (I2T) framework that generates text descriptions in natural language based on understanding of image and video content. **An image parsing engine** parses input images into their constituent visual patterns, in a spirit similar to parsing sentences in natural language. Inscriptions, the subject of epigraphy, are of huge importance for our knowledge of the ancient world; we have thousands upon thousands of inscribed texts, ranging from small graffiti to law codes of several hundred lines. This fascinating material truly constitutes the archival sources for the ancient world (together with papyri). Our goal is to be able to locate and use inscriptions (even without knowledge of Ancient text), and also to be aware of what epigraphers actually do; only then we can critically use the editions of inscriptions which they produce. Therefore working with inscriptions, and this is very much a hands-on course where you will be locating, reading and interpreting inscribed texts yourself for the ancient era.,

## 2. Problem Definition

To specify the detailed requirements of **"An Efficient Conversion of Epigraphical Textual Image to User Readable Text ".** This will explain the purpose and features of the system, what the system will do, and the constraint under which it must operate.

## 3. Existing System

Over the past two decades, many researchers from the both Petrology and Digital enhancement domain have been actively investigating possible ways of retrieving the images and videos clips based on Epigraphy and achieved successfully to the certain extend perhaps, not by the common users. The major challenge is a so called semantic gap and ancient text identification, which is defined as the discrepancy between human interpretations of textual image information and those currently derived by a computer.

### 3.1 Disadvantages

- Time complexity
- Decrease performance

## 4. Proposed System

The work can be further extended to facilitate the inscriptions of various other scripts like Metal, Pottery, Wood, Palm leaves, Cloth, Conch shell, Mural paintings and Copper plates that were prevalent in ancient India and other non Indian regions, during the regime of various rulers.

### 4.1 Advantages

- Increase performance
- Easy to read and understand

## 5. Architecture Design

Describes the Overall Architecture. The Project consists of the following modules:

- An image parsing engine
- An And-or Graph (AoG) visual knowledge representation
- A Semantic Web
- A text generation engine



### 5.1 An Image Parsing Engine

It parses input images into parse graphs. For specific domains such as the two case study systems presented in the image frame parse is automatic. For parsing general images from the Internet for the purpose of building a large-scale image dataset, an interactive image parser is used as discussed in section.

### 5.2 An And-or Graph (AoG) Visual Knowledge Representation

It embodies vocabularies of visual elements including primitives, parts, objects and scenes as well as stochastic image grammar that specifies syntactic relations and semantic relations (e.g. categorical, spatial, temporal and functional relations) between these visual elements. The categorical relationships are inherited from WordNet, a lexical semantic network of English. The AoG not only guides the image parsing engine with top-down hypotheses but also serves as an ontology for mapping parse graphs into semantic representation

### 5.3 A Semantic Web

It interconnects different domain specific ontologies with semantic representation of parse graphs. This step helps to enrich parse graphs derived purely from visual cues with other sources of semantic information.

### 5.4 A Text Generation Engine

It converts semantic representations into human readable and query-able natural language descriptions.

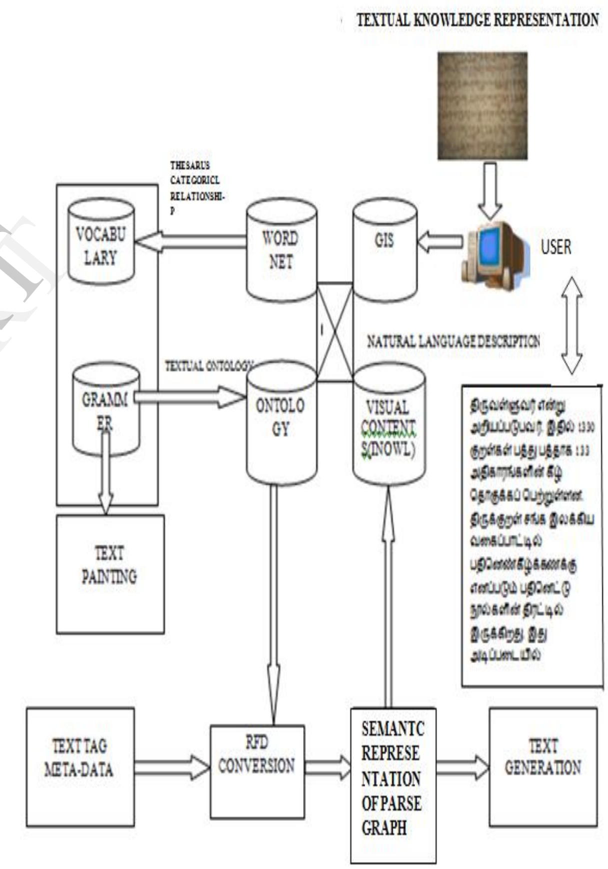


**Fig.1. AN EFFICIENT CONVERSION OF EPIGRAPHICAL TEXTUAL IMAGE TO USER READABLE TEXT**

## 6. Algorithm

### 6.1 SVM Algorithm

The Support Vector Machine (SVM) algorithm (Cortes and Vapnik, 1995) is probably the most widely used kernel learning algorithm. It achieves relatively robust pattern recognition performance using well established concepts in optimization theory.

**input** :
$L_{TR}$ =Training String Dataset Pool
$L_{TS}$ =Testing String Dataset Pool
$C$ =Parameter Combination Pool for Training ($c \in C$)
$C'$ =Parameter Combination Pool for Testing ($c' \in C'$)
$LA$ =SVM with String Kernel $SK$

**output**: Parameter combination $\hat{c}_l$ which yields the best accuracy for sting dataset $D_{lTS}$

**for** $l \leftarrow 1$ **to** $l'$ **do**
  Pick $D_{lTR}$ from $L_{TR}$
  **for** $p \leftarrow 1$ **to** $p'$ **do**
    Compute $f'_{p,D_{lTR}}$
  **end**
  **repeat**
    Pick a parameter combination $c$ from $C$
    Do 10-fold cross validation on $D_{lTR}$, using $LA$ with parameter combination $c$ which yields $Y_{D_{lTR},c}$ accuracy
  **until** *no more parameter combinations in* $C$;
**end**
Build a regression model (*meta model*) using $f'_{p,D_{lTR}}$, $c$, and $Y_{D_{lTR},c}$
**for** $l \leftarrow 1$ **to** $l'$ **do**
  Pick $D_{lTS}$ from $L_{TS}$
  **for** $p \leftarrow 1$ **to** $p'$ **do**
    Compute $f'_{p,D_{lTS}}$
  **end**
  **repeat**
    Pick a parameter combination $c'$ from $C'$
    Predict accuracy $Y_{D_{lTS},c'}$ for $LA$ with parameter combination $c'$ using build *meta model*
    **if** $Y_{D_{lTS},c'}$ *is maximum* **then**
      $\hat{c}_l = c'$
    **end**
  **until** *no more parameter combinations in* $C$;
**end**

### 6.2 RFD Algorithm

In this paper we present an approach based on genetic algorithms for determining optimal RDF query paths. The performance of this approach is benchmarked against the performance of a two-phase optimization algorithm.

For more complex queries, the genetic algorithm RDFGA generally outperforms two-phase optimization in solution quality, execution time needed, and consistency in performance. Setting a time limit improves the overall performance of RDFGA compared to two-phase optimization even more.

BASICQANSONEVAR($(s, p, o), (W, E, \rho)$)
**if** VARIABLE($s$):
  $E_p \leftarrow \{e \in E: \rho(p, e) = \text{'p'}\}$
  $E_o \leftarrow \{e \in E: \rho(o, e) = \text{'o'}\}$
  $E_Q \leftarrow E_p \cap E_o$
  $ans \leftarrow \{(x, p, o): e \in E_Q \wedge \rho(x, e) = \text{'s'}\}$
**else**
  **if** VARIABLE($p$):
    $E_s \leftarrow \{e \in E: \rho(s, e) = \text{'s'}\}$
    $E_o \leftarrow \{e \in E: \rho(o, e) = \text{'o'}\}$
    $E_Q \leftarrow E_s \cap E_o$
    $ans \leftarrow \{(s, y, o): e \in E_Q \wedge \rho(y, e) = \text{'p'}\}$
  **else**
    $E_s \leftarrow \{e \in E: \rho(s, e) = \text{'s'}\}$
    $E_p \leftarrow \{e \in E: \rho(p, e) = \text{'p'}\}$
    $E_Q \leftarrow E_s \cap E_p$
    $ans \leftarrow \{(s, p, z): e \in E_Q \wedge \rho(z, e) = \text{'o'}\}$
**return** $ans$

## 7. Conclusion and Future Enhancements

This paper proposes a framework that provides an end-to-end solution for parsing image and video content, extracting video event, and providing semantic and text annotation. One major contribution is the AoG visual knowledge representation. The AoG is a graphical representation for learning categorical image representations and symbolic representations simultaneously from a large-scale image. It not only provides top-down guides during the image parsing process but also connects low-level image features with high level semantically meaningful concepts so that the parsed image can be seamlessly transformed to a semantic meta-data format and finally to a textual description.

### 7.1 Future Enhancements

Over the past two decades, many researchers from the both Petrology and Digital enhancement domain have been actively investigating possible ways of retrieving the images and videos clips based on Epigraphy and achieved successfully to the certain extend perhaps, not by the common users. The major challenge is a so called semantic gap and ancient text identification, which is defined as the discrepancy between human interpretations of textual image information and those currently derived by a computer. The work can be further extended to facilitate the inscriptions of various other scripts like Metal, Pottery, Wood, Palm leaves, Cloth, Conch shell, Mural paintings and Copper plates that were prevalent in ancient India and other non Indian regions, during the regime of various rulers.

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## BIBLIOGRAPHY

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