Time-Travel on the Internet Via An Internet Archiving System

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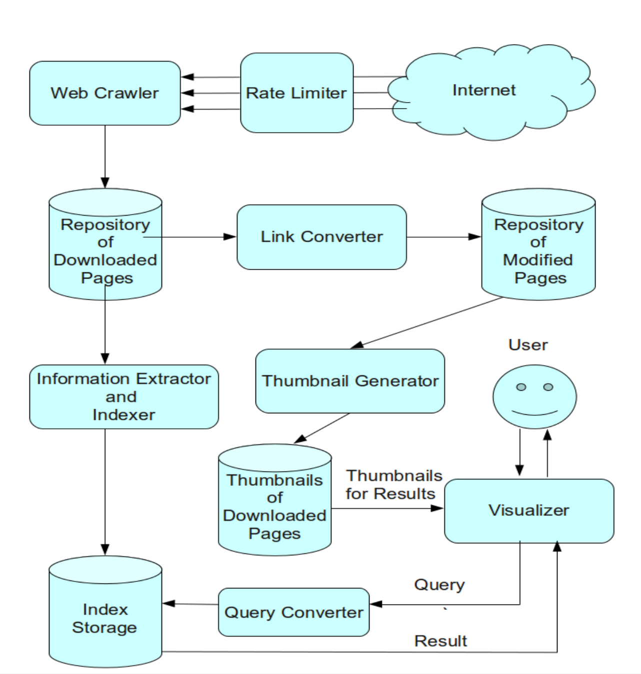
INTRODUCTION

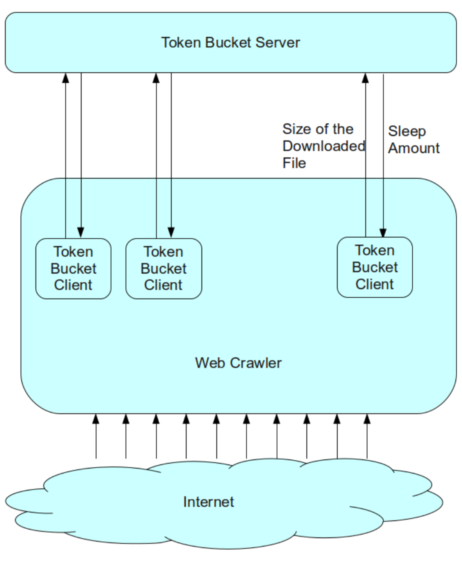
Internet browsing enables people to locate a myriad of information, but web pages are continually updated, so it is usually impossible to view archived web pages. This project implemented an Internet archiving system to allow virtual "time travel on the Internet."

DESIGN

The system includes several components:

1) web crawler
2) download speed limiter
3) information extractor and indexer
4) page modifier
5) HTML-to-PNG converter
6) query converter and visualizer



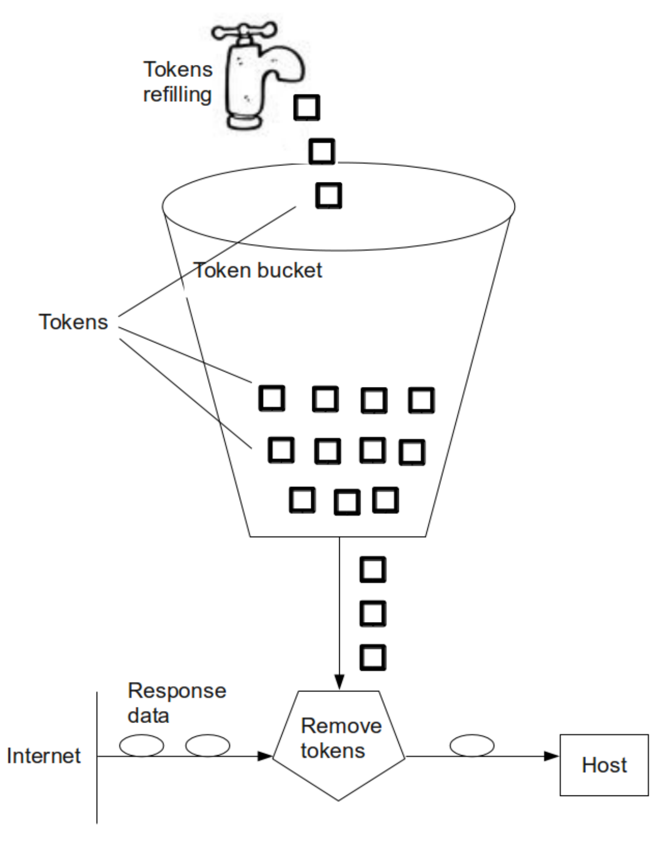


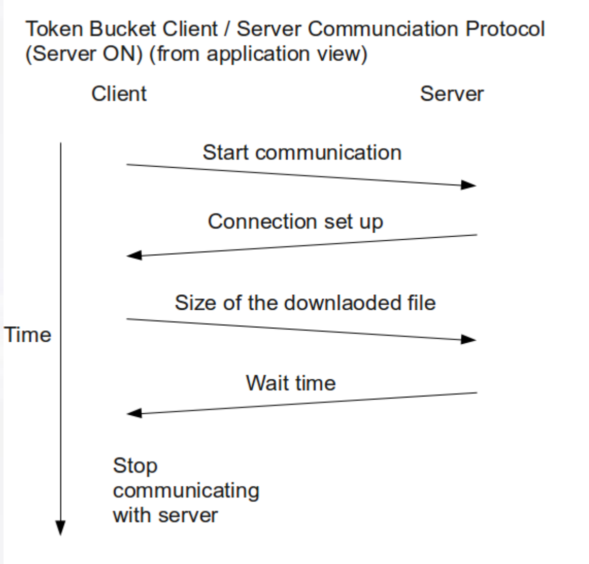
Web Crawler

- Automated parallel downloading
- Passive download rate limitation
- Scheduled daily seed sites downloading
- Obedience to Robot Exclusion Protocol

Rate Limiter

- Simulates network traffic shaping
- Implements the Token Bucket Algorithm
- Multi-threaded implementation of the algorithm
- Compatible with any program via transmission control protocol (TCP)




Token Bucket Client / Server Communciation Protocol (Server ON) (from application view)
Client
Server
Start communication
Connection set up
Size of the downlaoded file
Wait time
Time
Stop communicating with server

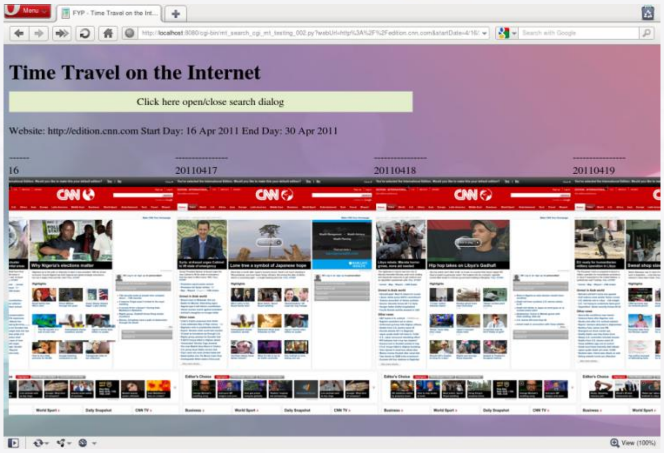
Information Extractor and Indexer

- Search by complete webpage addresses
- Search by part of webpage addresses
- Compare contents between 2 webpages

Page Modifier, HTML-to-PNG Converter

- Facilitating the visualizers with preserved appearances of different pages

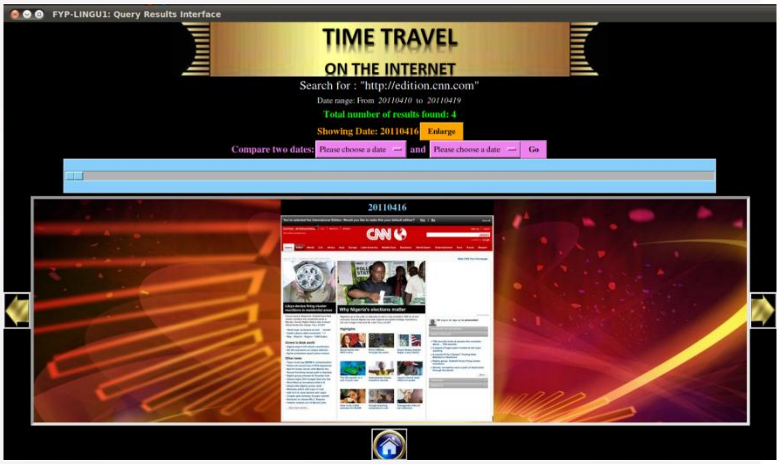
Visualizers (Web Interface and Tk Interface)


Menu
FYP - Time Travel on the Int...
http://localhost:8080/cgi-bin/mt_search_cgi_mt_testing_002.py?webUrl=http%3A%2F%2Fedition.cnn.com&startDate=4/16/
Search with Google
Click here open/close search dialog
View (100%)

Time Travel on the Internet

Website: http://edition.cnn.com Start Day: 16 Apr 2011 End Day: 30 Apr 2011

16 20110417 20110418 20110419



Search for : "http://edition.cnn.com"

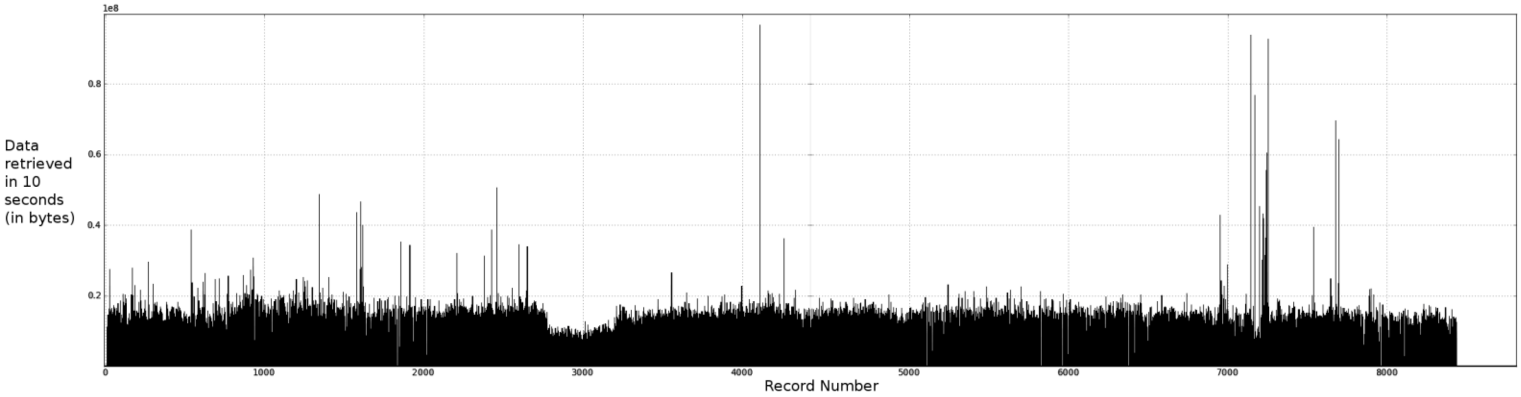
Date range: From 20110410 to 20110419

Total number of results found: 4

Showing Date: 20110416

Compare two dates: Please choose a date and Please choose a date

STATISTICS



Download rate captured every 10 seconds

CONCLUSION

In this project, we built a system that saves, converts, indexes pages, and display archived webpages. The system allows users compare webpages over time conveniently. The system also allows developing extensions easily.