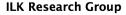
CLAM: Computational Linguistics Application Mediator

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20 Mei 2010













Introduction

Observation

There are a lot of specialised command-line NLP tools available.

Problems

- Tools often available only locally, installation and configuration can be tough
- Not very user-friendly for the untrained general public or technically-challenged researchers (aka Linguists)
- 4 How to connect one tool to another?



Solution

Making NLP tools available as a full-fledged webservice.

Advantages

- Services available over the web.
- User-friendly interface built-in in the webservice
- Great for demo purposes
- Multiple webservices can be chained in a workflow

Our Focus

- 1 A universal approach: wrapping
 - Turn almost any NLP tool into a webservice with minimal effort
 - NLP tool = Given input files and a custom set of parameters, produce output files
 - No need to alter the tool itself
- Machine-parsable interface & Human-friendly interface

Wrapping Approach

- NLP application: blackbox
- Wrapper script
- CLAM Webservice



ntroduction Technical Details Setup End

Technical Details

RESTful Webservice

RESTful Webservice (as opposed to SOAP, XML-RPC)

- Resource-oriented: "Representations" of "resources" (projects)
- Using HTTP verbs
- Lightweight
- Returns human-readable, machine-parseable XML adhering to a CLAM XML Scheme Definition
- User authentication in the form of HTTP Digest Authentication



Written entirely in Python 2.5

- NLP tools, wrapper scripts, and clients may be in any language
- But: Readily available API when writing wrapper scripts and clients in Python.
- Built on web.py, runs standalone and out-of-the box with built-in CherryPy webserver

Built-in User Interface

User interface automatically generated from XML using XSLT (in browser)

- Webservice directly accessible from webserver
- Web 2.0 interface: xHTML Strict, jquery (javascript), AJAX, CSS

Setup

CLAM Setup

Projects are the main resources, users start a new project for each experiment/batch.

Three states:

- Status 0) Parameter selection and file upload
- **Status 1)** System in progress
 - Actual NLP tool runs at this stage only
 - Users may safely close browser, shut down computer, and come back later in this stage
- Status 2) System done, view/download output files



Setup

Setup

Providing a Service

In order to make a webservice:

- Write a service configuration file (in Python, but no Python experience required).
 - General meta information about your system (name, description, etc..)
 - Definition of parameters accepted by your system/wrapper script
 - Definition of input formats and output formats
 - Definition of users and authentication method
- Write a wrapper script for your system
 - Wrapper script is invoked by CLAM, and should in turn invoke the actual system
 - Acts as glue between CLAM and your NLP Application.
 - Can be written in any language (python users may benefit from the CLAM API)
 - Not always necessary, NLP applications can be invoked directly by CLAM as well.

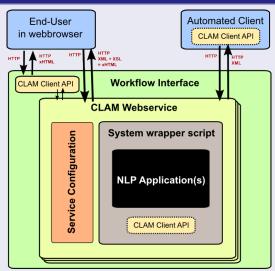


Writing a Client

- Communicate with service over HTTP, using HTTP verbs on projects and files to effectuate state transfers
 - GET / List all projects
 - GET /project/ Get a project's state
 - PUT /project/ Create a project
 - POST /project/ Start a project with POSTed data as parameters
 - DELETE /project/ Delete or abort a project
 - POST /project/upload/ Upload a file
 - GET /project/output/ Download all output files as archive
 - GET /project/output/file Download output file
- Parse XML responses
- Opening Python users benefit from CLAM Client API, taking care of all above communication and response parsing!

Setup

Architecture



- Second Interface
 - Can drive multiple webservices
 - Service chaining abilities
 - Output visualisation modules



