
XAM4SWS – User Manual – Version 11/2010

Please read this user manual – specifically the parts marked with “Important notice” – carefully in order to avoid any problems in the evaluation of XAM4SWS.

Introduction

XAM4SWS (“Cross-Architectural Matchmaker for Semantic Web Services”) is a service discovery engine / matchmaker kit for semantic Web services. It contains two individual matchmakers, both of which participated in the 2010 Semantic Service Selection (S3) Contest¹:

- *LOG4SWS.KOM* employs “classic” subsumption reasoning, but maps the discrete Degrees of Match (DoMs) into numerical equivalents. The mapping process may be conducted using an Ordinary Least Squares (OLS) estimator, thus permitting automatic adaption to a certain test collection. As a complement to subsumption matching, a path length measure is employed.
- *COV4SWS.KOM* uses similarity measures from the field of semantic relatedness, namely the measures by Lin and Resnik. It employs an OLS estimator in order to determine optimal weights for the aggregation of similarity values from different service abstraction levels.

Both matchmakers additionally use a *WordNet*-based fallback strategy, in case semantic information is not available. Additional details on the principal function of XAM4SWS can be found in two recent papers (Schulte et al., 2010; Lampe et al., 2010).

Installation & Requirements

This version of XAM4SWS comes readily bundled with the Semantic Matchmaker Evaluation Environment (SME²). Thus, no installation procedure is required.

However, there are some requirements for XAM4SWS to work properly:

- XAM4SWS requires a permanent Internet connection²
- Neither the „XAM4SWS“ folder nor any of its contained subfolders may be renamed, moved, or deleted
- Full read and write access has to be granted for the “XAM4SWS\resources” folder (for cache and training data storage)

Predefined Configurations & Evaluation Process

XAM4SWS comes with two preconfigured configuration files. These configurations were also employed in the 2010 S3 Contest.

¹ <http://www-ags.dfki.uni-sb.de/~klusck/s3/html/2010.html>

² Only if test collections are utilized that contain service descriptions in the WSDL 2.0 format.

- S3-LOG4SWS.xml
LOG4SWS.KOM using manual service level weights of 0.1/0.1/0.4/0.4 (for Inter-face/Operation/Input/Output levels respectively) and an OLS-based DoM mapping
- S3-COV4SWS.xml
COV4SWS.KOM using the similarity measure by Resnik with OLS-based determination of service level weights

The desired variant / configuration file may be freely chosen shortly after the beginning of the evaluation process in SME². An example of the selection window is depicted in Figure 1.



Figure 1: Selection of the desired configuration

Important notice: For maximum convenience, this version of XAM4SWS has been specifically pre-configured for evaluation with the SAWSDL-TC3 and contains all required training data. It does *not* support the evaluation of test collections other than SAWSDL-TC3.

For other variants of XAM4SWS – which include support for additional description formats and test collections –, please refer to the project homepage, which is listed at the end of this paper.

Benchmark Results

This version of XAM4SWS comes with two benchmark result files, reflecting the results in the 2010 S3 Contest. Both files are located in the “XAM4SWS\benchmark” subfolder. The result files have been created with SME², version 2.1 rev. 1, based on the SAWSDL-TC3 test collection. The evaluation metrics provided in the files should be used in all publications where COV4SWS.KOM and/or LOG4SWS.KOM are referenced for comparison.

Included Third-Party Resources

This distribution of XAM4SWS includes the following third-party resources in the “XAM4SWS\lib” subfolder:

- EasyWSDL
- Java Document Object Model (JDOM)
- Java WordNet Library (JWNL)
- OWL-S API 2
- Pellet 2.2.2
- Weka
- Woden4SAWSDL

Additionally, the dictionary files for the WordNet ontology, version 2.1 are included in the “XAM4SWS\resources\dict” subfolder.

For each third-party resource, the corresponding license agreement is provided in a text file entitled “LICENSE.txt”, “COPYING.txt”, or similar.

Contact Information

In case you have any questions or experience problems with XAM4SWS, please feel free to contact the developers:

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Project Homepage

Future updates of XAM4SWS and this user manual will be available via our project homepage at SemWebCentral: <http://projects.semwebcentral.org/projects/xam4sws>

References

- Ulrich Lampe, Stefan Schulte, Melanie Siebenhaar, Dieter Schuller, Ralf Steinmetz: Adaptive Matchmaking for RESTful Services based on hRESTS and MicroWSMO (accepted for publication). In: Proceedings of the 5th Workshop on Enhanced Web Service Technologies (WEWST) at the 8th European Conference on Web Services (ECOWS 2010), IEEE Computer Society, December 2010.
- Stefan Schulte, Ulrich Lampe, Julian Eckert, Ralf Steinmetz: LOG4SWS.KOM: Self-Adapting Semantic Web Service Discovery for SAWSDL. In: IEEE 2010 Fourth International Workshop of Software Engineering for Adaptive Service-Oriented Systems (SEASS '10) at 2010 IEEE 6th World Congress on Services (SERVICES 2010), p. 511-518, IEEE Computer Society, July 2010. ISBN 978-0-7695-4129-7.