

Classifying Research Papers with the Computer Science Ontology

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The Computer Science Ontology

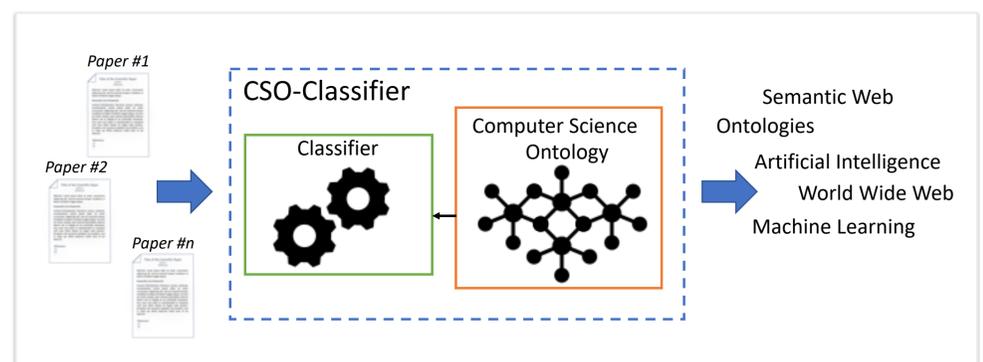
The **Computer Science Ontology (CSO)** is an ontology of research areas that was automatically generated using the Klink-2 algorithm [1] on a dataset of 16 million publications, mainly in the field of Computer Science. Ontologies like CSO are invaluable tools for: i) making sense of the research dynamics, ii) classifying publications, iii) identifying research communities, and iv) forecasting research trends [2].

CSO includes a large number of fine-grained research topics, and it can be easily updated by running Klink-2 on recent corpora of publications.

The current version of CSO includes 13K semantic topics and 133K relationships. The main root is Computer Science; however, the ontology includes also a few secondary roots, such as Linguistics, Geometry, Semantics, and so on.

The CSO Classifier

The CSO Classifier is an application that classifies the content of scientific papers (i.e., full-text, abstract, and title) according to CSO. Given a document, the CSO Classifier initially identifies its research concepts. Then, using the *skos:broaderGeneric* relationships within the CSO, the classifier infers also their super concepts – only their direct super-topics or the complete set of super-topics.



Try it!

Annotated document:

Classifying Research Papers with the **Computer Science Ontology**

Abstract: Ontologies of research areas are important tools for characterising, exploring and analysing the research landscape. We recently released the **Computer Science Ontology (CSO)**, a large-scale, automatically generated ontology of research areas, which includes about 26K topics and 226K semantic relationships. CSO currently powers several tools adopted by the Springer Nature editorial team and has been used to enable a variety of solutions, such as classifying research publications, detecting research communities, and predicting research trends. As an effort to encourage the usage of CSO, we have developed the CSO Portal, a **web application** that enables users to download, explore, and provide granular feedbacks at different levels of the **ontology**. In this paper, we present the CSO **Classifier**, an application for automatically classifying academic papers according to the rich taxonomy of topics from CSO. The aim is to facilitate the adoption of CSO across the various communities engaged with scholarly data and to foster the development of new applications based on this **knowledge base**.

Keywords: Scholarly Data, **Ontology Learning**, Scholarly **Ontologies**, **Text Mining**, Topic Detection, Taxonomy, **Classifier**, **Web Application**.



Learn more

[1] Osborne, F. and Motta, E. (2015) Klink-2: Integrating Multiple Web Sources to Generate Semantic Topic Networks, ISWC2015, USA

[2] Salatino, A.A., Thanapalasingam, T., Mannocci, A., Osborne, F., Motta, E. (2018) The Computer Science Ontology : A Large-Scale Taxonomy of Research Areas, ISWC 2018, USA.

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