The Software Engineering Observatory Portal

Mívian Ferreira[2], Bruno Sousa[2], Kecia Ferreira[1], and Mariza Bigonha[2]

[1]CEFET-MG, Dept. of Computing, Minas Gerais (Brazil)

[2]UFMG, Dept. of Computer Science, Minas Gerais (Brazil)

What is Software Engineering?

Discipline of Computer Science

Term was coined by Margareth Hamilton in the 1960’s

Concerns with all aspects of software production, involving specification, development, test, maintenance, and management

52 years of Software Engineering

A massive quantity of techniques, methods, and tools have been proposed

How to understand Software Engineering Evolution?

Aims to **compile the body of knowledge** of Software Engineering

The portal allows analyzing software engineering evolution and researchers' contributions through **data visualization**

Building the Database

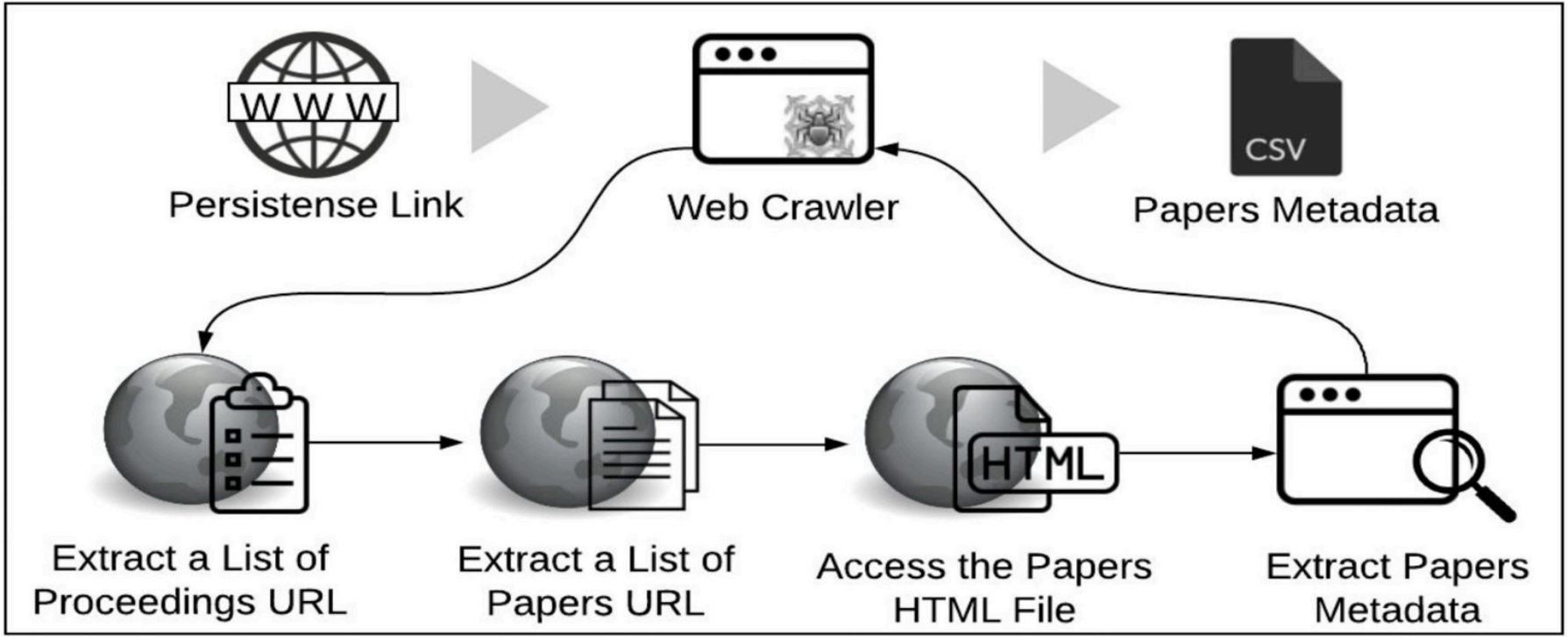
Retrieved metadata of the two main venues of Software Engineering:

ICSE - International Conference on Software Engineering (1988-2018)

TSE - IEEE Transactions on Software Engineering (1975-2018)

Documents available at the IEEE Xplorer Digital Library

Building the Database



The Papers’ Metadata

- Title
- Authors’ names
- Authors’ affiliations
- Year of publication
- Number of citations
- Keywords
- Publication venue (ICSE or TSE)

Clearing the Database

Inclusion Criteria:

- full articles
- short papers
- research in progress
- works available in electronic format

Exclusion Criteria:

- tutorials
- panels
- lectures, and keynote talks
- call for workshops and symposium
- proceedings and round tables
- presentation of sessions and tracks

Manual Preprocessing

Keywords Standardization:

- identify synonyms
- Example: bug, error, failure

Papers Classification:

- procedure or technique, qualitative or descriptive, model, empirical model, analytic model, tool, specific solution, empirical study, and report

Authors' names disambiguations:

- identify authors with different forms of names
- Example: Prem Devanbu, P. Devanbu, P. K. Devanbu

The Software Engineering Observatory Portal

Features

50 Years of Software Engineering

mivanferreira.github.io/docs/TheSoftwareEngineeringObservatoryPortal/word_cloud/ICSE.html

50 Years of Software Engineering

Home Authors Papers Categories Keywords Word Cloud

2010 2016 FILTER

Conclusion

The Software Engineering Observatory Portal allows analyzing the **evolution of Software Engineering** in terms of authorship and subjects investigated in the area

The portal is based on **Data Visualization**

So far, the data used in the portal are from the two main venues of software engineering research: **ICSE and TSE**

Future Work

We are working on the automatization of the data preprocessing to keep the portal up to date

With such automatization, we will Include data from other venues in the portal

The portal may be extended to other disciplines of Computer Science

The same method may be applied in other fields

Questions or Suggestions?

Feel free to contact any of us:

Mívian Ferreira - mivian.ferreira@dcc.ufmg.br

Bruno L. Sousa - bruno.luan.sousa@dcc.ufmg.br

Kecia A. M. Ferreira - kecia@cefetmg.br

Mariza Bigonha - mariza@dcc.ufmg.br