Many data sets contain temporal records over a long period of time; each record is associated with a timestamp and describes aspects of a real-world entity at that particular time. From such data, users often wish to search for entities in a particular period and understand the history of one entity or all entities in the data set. A major challenge for enabling such search and exploration is to identify records that describe the same real-world entity over a long period of time; however, linking temporal records is hard given that the values that describe an entity can evolve over time (e.g., a person can move from one affiliation to another).

We demonstrate the CHRONOS system which offers users the useful tool for finding real-world entities over time and understanding history of entities in the bibliography domain. The core of CHRONOS is a temporal record-linkage algorithm [1], which is tolerant to value evolution over time: CHRONOS (1) allows users to explore the history of authors, (2) helps users understand linkage results by comparing our results with those of existing systems, highlighting differences in the results, explaining our decisions to users, (3) and answering “what if” questions.

**System Features**

**Motivations**

Comparing results:
For each author, CHRONOS shows side-by-side the list of papers according to the linkage results by CHRONOS, by DBLP, and by BASIC [2]. It also highlights differences between the lists.

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Online linkage:
CHRONOS answers “what-if” questions by allowing the user to (1) select a subset of records, (2) change records’ values (3) choose different linkage techniques and then compare the results.

Author extraction:
This component takes the DBLP data as input. For each paper, it extracts records about authors, including author name, paper title, conference, co-authors, research topics, and so on. The snapshot shows the history of various aspects of author Xin Dong, and her publishing statistics.

Tracing history:
CHRONOS allows to trace the history of a particular author, such as her affiliation, co-authors, research topics, and so on. The snapshot shows the history of various aspects of author Xin Dong, and her publishing statistics.

Explaining difference:
CHRONOS explains difference decisions on each highlighted publication. The snapshot explains why paper #18 of Xin Luna Dong is included by DBLP but not by CHRONOS.

**Framework**

Data set:
Data extracted from more than 500 M publication entries in DBLP, ACM, Springer, IEEE etc.

History explorer:
Is the interface through which the user interacts with the system. It offers (1) author search by name, time period, and affiliation, (2) history tracing for each author, and (3) statistics view of the data.

Linkage explanation:
Explains linkage decisions. It shows the comparison of results from CHRONOS, from DBLP, and from BASIC [2]. (2) explains the decision of a particular paper included in or excluded from the list of papers for a particular author, and (3) performs online temporal linkage and answers “what-if” questions.

**Reference**


Contact: pei.li@disco.unimib.it

Demo URL: http://siti.disco.unimib.it/8080/Chronos/