

**Structure Based User Identification across Social Networks**

**Abstract:**

Identification of anonymous identical users of cross-platforms refers to the recognition of the accounts belonging to the same individual among multiple Social Network (SN) platforms. Evidently, cross-platform exploration may help solve many problems in social computing, in both theory and practice. However, it is still an intractable problem due to the fragmentation, inconsistency and disruption of the accessible information among SNs. Different from the efforts implemented on user profiles and users’ content, many studies have noticed the accessibility and reliability of network structure in most of the SNs for addressing this issue. Although substantial achievements have been made, most of the current network structure-based solutions, requiring prior knowledge of some given identified users, are supervised or semi-supervised. It is laborious to label the prior knowledge manually in some scenarios where prior knowledge is hard to obtain. Noticing that friend relationships are reliable and consistent in different SNs, we proposed an unsupervised scheme, termed Friend Relationship-based User Identification algorithm without Prior knowledge (FRUI-P). The FRUI-P first extracts the friend feature of each user in an SN into friend feature vector, and then calculates the similarities of all the candidate identical users between two SNs. Finally, a one-to-one map scheme is developed to identify the users based on the similarities. Moreover, FRUI-P is proved to be efficient theoretically. Results of extensive experiments demonstrated that FRUI-P performs much better than current state-of-art network structure-based algorithm without prior knowledge. Due to its high precision, FRUI-P can additionally be utilized to generate prior knowledge for supervised and semi-supervised schemes. In applications, the unsupervised anonymous identical user identification method accommodates more scenarios where the seed users are unobtainable.

**Existing System:**

In the early stage, researchers utilized the uniquenessof the email address and linked identical users in different SNs correctly by building up the “Find Friend”mechanismthrough these email addresses. Although email ad-dresses are a powerful attribute for this task, they were banned by the SNs successivelydue to privacy protectionconcerns.Totackle this issue, more efforts were made on the accessible attributes of the SNs, e.g., the user profile attributes.

**Proposed System:**

Proposing a novel unsupervised user identification algorithm, termed Friend Relationship-based User Identi-fication without Prior Knowledge(FRUI-P).

FRUI-P ex-tracts the multiple dimensional features of each user from the network structure, and then the similarities of any two users in two different SNs are evaluated from the multiple dimensional features. Since the multiple dimensional fea-tures of users are considered, FRUI-P has the ability to rec-ognize more identical users than NM, in which the features in only one dimensional are taken into the consideration.

We proposed a **F**riend **F**eature **V**ector **M**odel (FFVM) which utilizes the power of random walk. Although Word2Vec has been widely examined in measuring the similarity of any two words, its performance in un super-vised cross-platform task is unknown. We first carried out the investigation and the empirical testing results proved that FFVM is effective in the user identification task.