



# DIVa: Decentralized Identity Validation for Social Networks

Amira Soliman, Leila Bahri, Barbara Carminati, Elena Ferrari, Sarunas Girdzijauskas

## Online Identity Validation

How can Social Networks users establish authenticity of unknown peers?



### DIVa

1. DiVa is a decentralized identity validation model to extract the hidden dependencies among profile attributes.
2. DiVa provides users with fine-grained community-based association rules better than the global rules generated by centralized approach.

#### Goal

Develop an identity validation mechanism that detects claimed and fake identities without disclosure of users' confidentialities.

#### Requirements

1. Privacy Preservation,
2. Decentralized environment,
3. Efficient community-aware validation,
4. Scalability.

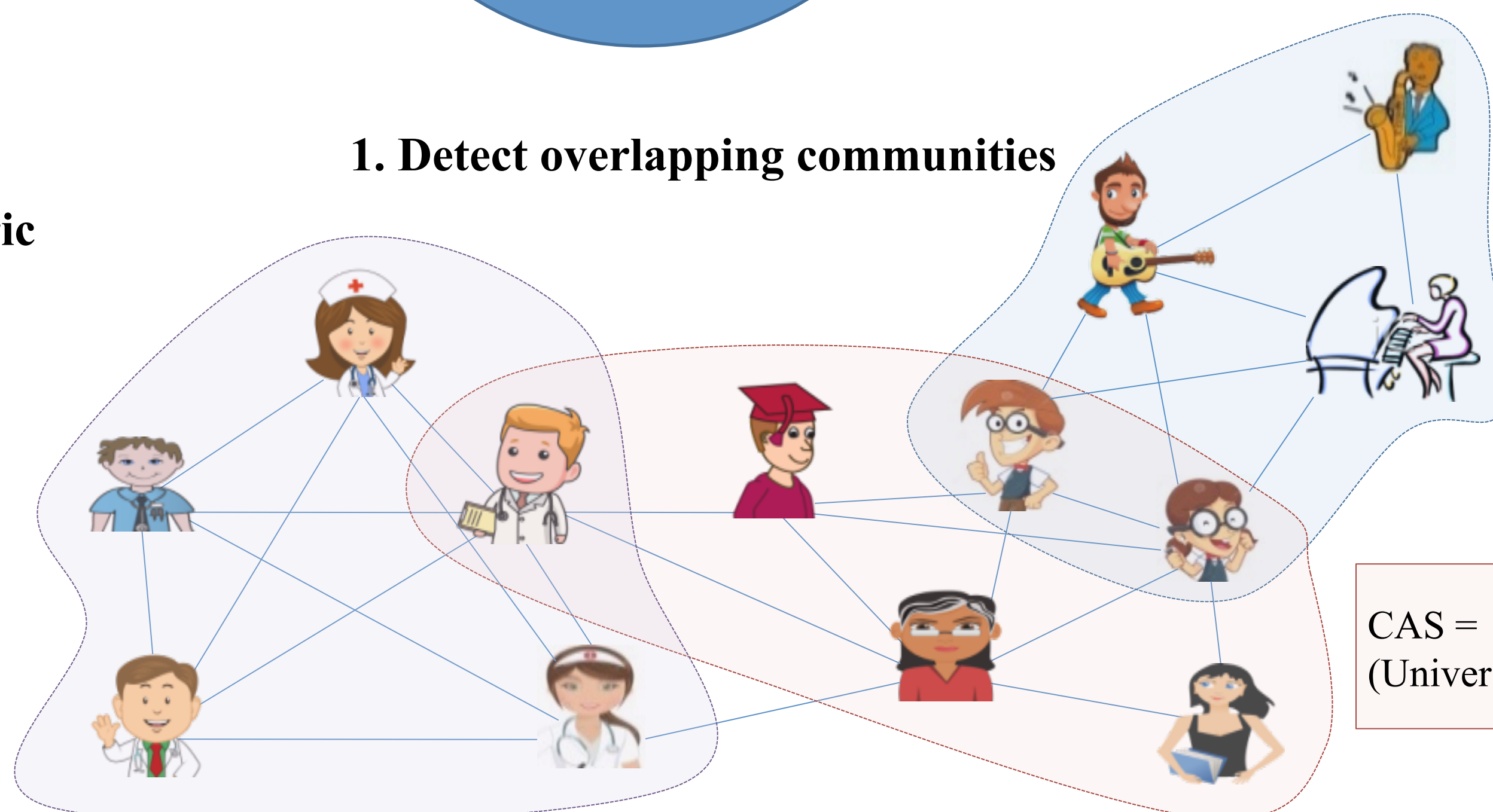
#### Approach

Decentralized collaborative learning with limited view of the social network structure.

### Step (1)

Decentralized Community Detection

#### 1. Detect overlapping communities



CAS = { (Degree, Employer), (Employer, City) }

#### 2. ARM node-centric algorithm

LCAS<sub>(i)</sub>

(Degree, Job)  
(Degree, Employer)  
(Employer, City)

#### 3. CAS aggregation

CAS = { (City, Interest),  
(Job, Interest) }

CAS = { (University, Degree),  
(University, City) }

### Step (2)

Association Rule Mining using Local Data

### Step (3)

Aggregating Correlated Attributes Sets

## Improvements achieved by DiVa

