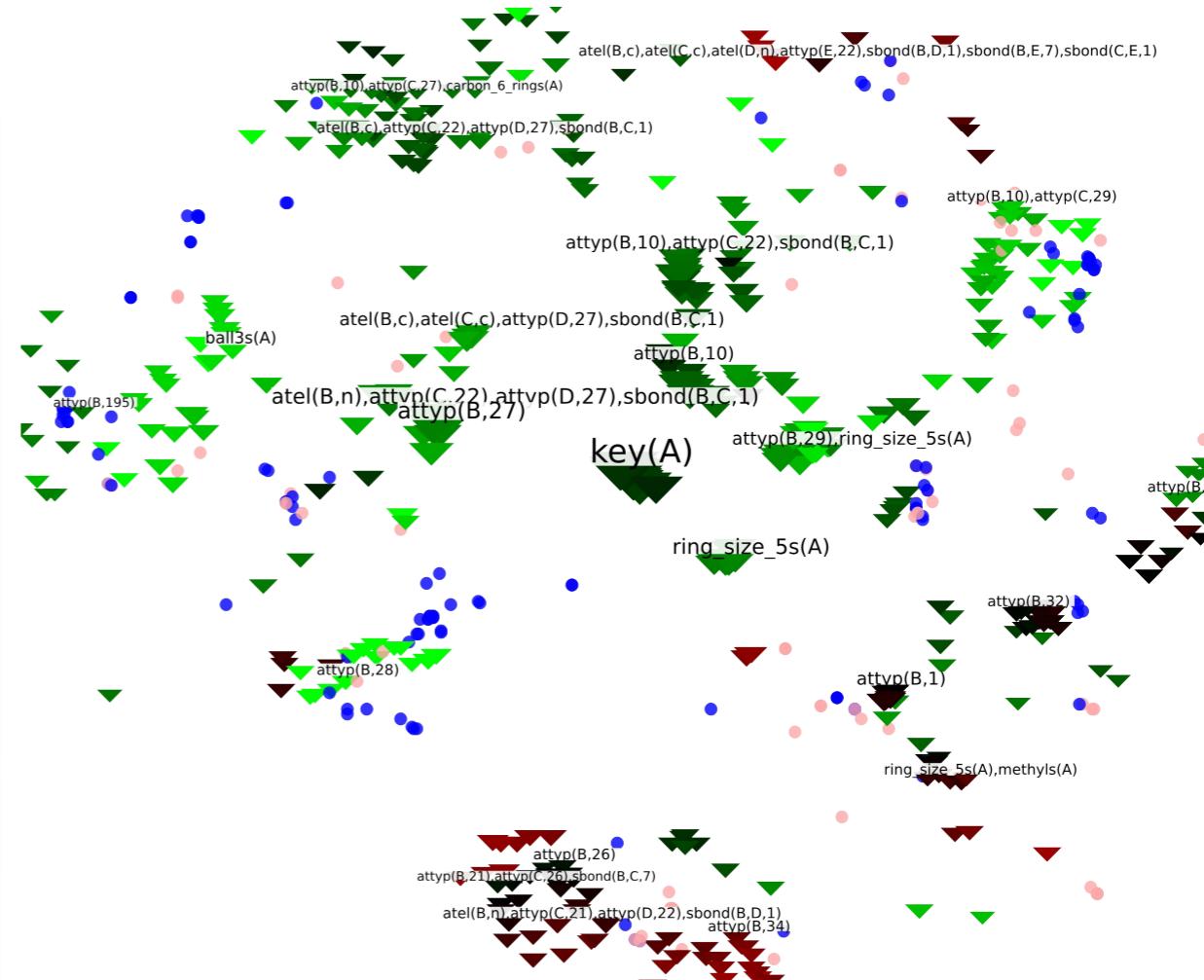


# ILP, the Blind and the Elephant: Euclidean Embedding of Co-Proven Queries

Hannes Schulz, Kristian Kersting, Andreas Karwath

```
key(A), attyp(A,B,28), attyp(A,C,28), sbond(A,B,C,1).  
key(A), atel(A,B,c), atel(A,C,c), attyp(A,D,27), sbond(A,B,C,1),  
    sbond(A,B,D,7), carbon_6_rings(A).  
key(A), attyp(A,B,22), methyls(A).  
key(A), atel(A,B,c), atel(A,C,c), atel(A,D,h), atel(A,E,n),  
    sbond(A,B,C,7), sbond(A,B,D,1), sbond(A,C,E,1),  
    benzenes(A), ring_size_5s(A).  
key(A), atel(A,B,c), atel(A,C,c), atel(A,D,h), atel(A,E,n),  
    attyp(A,F,10), sbond(A,B,C,7), sbond(A,B,D,1),  
    sbond(A,C,E,1).  
key(A), atel(A,B,c), attyp(A,C,10), attyp(A,D,27), attyp(A,E,27),  
    sbond(A,B,C,1), sbond(A,D,E,7).  
key(A), atel(A,B,c), attyp(A,C,21), attyp(A,D,26), attyp(A,E,26),  
    sbond(A,B,C,7), sbond(A,B,D,7), sbond(A,C,E,7).  
key(A), atel(A,B,c), atel(A,C,c), atel(A,D,n), attyp(A,E,22),  
    sbond(A,B,D,1), sbond(A,B,E,7), sbond(A,C,E,1).  
key(A), attyp(A,B,28), attyp(A,C,28), sbond(A,B,C,1).  
key(A), atel(A,B,c), atel(A,C,c), attyp(A,D,27), sbond(A,B,C,1),  
    sbond(A,B,D,7), carbon_6_rings(A).  
key(A), attyp(A,B,22), methyls(A).  
key(A), atel(A,B,c), atel(A,C,c), atel(A,D,h), atel(A,E,n),  
    sbond(A,B,C,7), sbond(A,B,D,1), sbond(A,C,E,1),  
    benzenes(A), ring_size_5s(A).  
key(A), atel(A,B,c), atel(A,C,c), atel(A,D,h), atel(A,E,n),  
    attyp(A,F,10), sbond(A,B,C,7), sbond(A,B,D,1),  
    sbond(A,C,E,1).  
key(A), atel(A,B,c), attyp(A,C,10), attyp(A,D,27), attyp(A,E,27),  
    sbond(A,B,C,1), sbond(A,D,E,7).  
key(A), atel(A,B,c), attyp(A,C,21), attyp(A,D,26), attyp(A,E,26),  
    sbond(A,B,C,7), sbond(A,B,D,7), sbond(A,C,E,7).
```



# ILP, the Blind and the Elephant: Euclidean Embedding of Co-Proven Queries

Hannes Schulz, Kristian Kersting, Andreas Karwath

- First visualization of relational data
- Visualizes entities and frequent queries
- Co-proven queries are close to e.o.
- Entities in database are close to their properties
- Method to analyze and pre-process features for specificity, similarity, usefulness for classification with respect to the actual data

