

Patterns that Matter

BSc thesis topics

Matthijs van Leeuwen

Leiden Institute of Advanced Computer Science

1 December 2015



Universiteit
Leiden

Big Data: A Game Changer in the retail sector

Forbes

Predicting trends

Forecasting demand

Optimizing pricing

Identifying customers

... ***predictive analytics!***

Google's take on Deep learning / machine learning

Great, and .. predictive

[tensorflow.org](https://www.tensorflow.org)

TensorFlow is an Open Source Software
Library for Machine Intelligence

GET STARTED

What if ...

We need a **summary** of our data?

We need **explanations** to backup our decisions?

We require **interpretability**?

We aim for **description** rather than (black box) **prediction**?

Exploratory data mining is discovering structure to gain novel insights

*“Tell me **something interesting** about my data”*

Mining **patterns that matter** from data

Different from **machine learning**

Description rather than prediction

Interpretation and explanation

Flight events

With & at KLM



Can we detect

- re-occurring sequences of events?
- anomalies?

Social network analysis

Focus on emotions

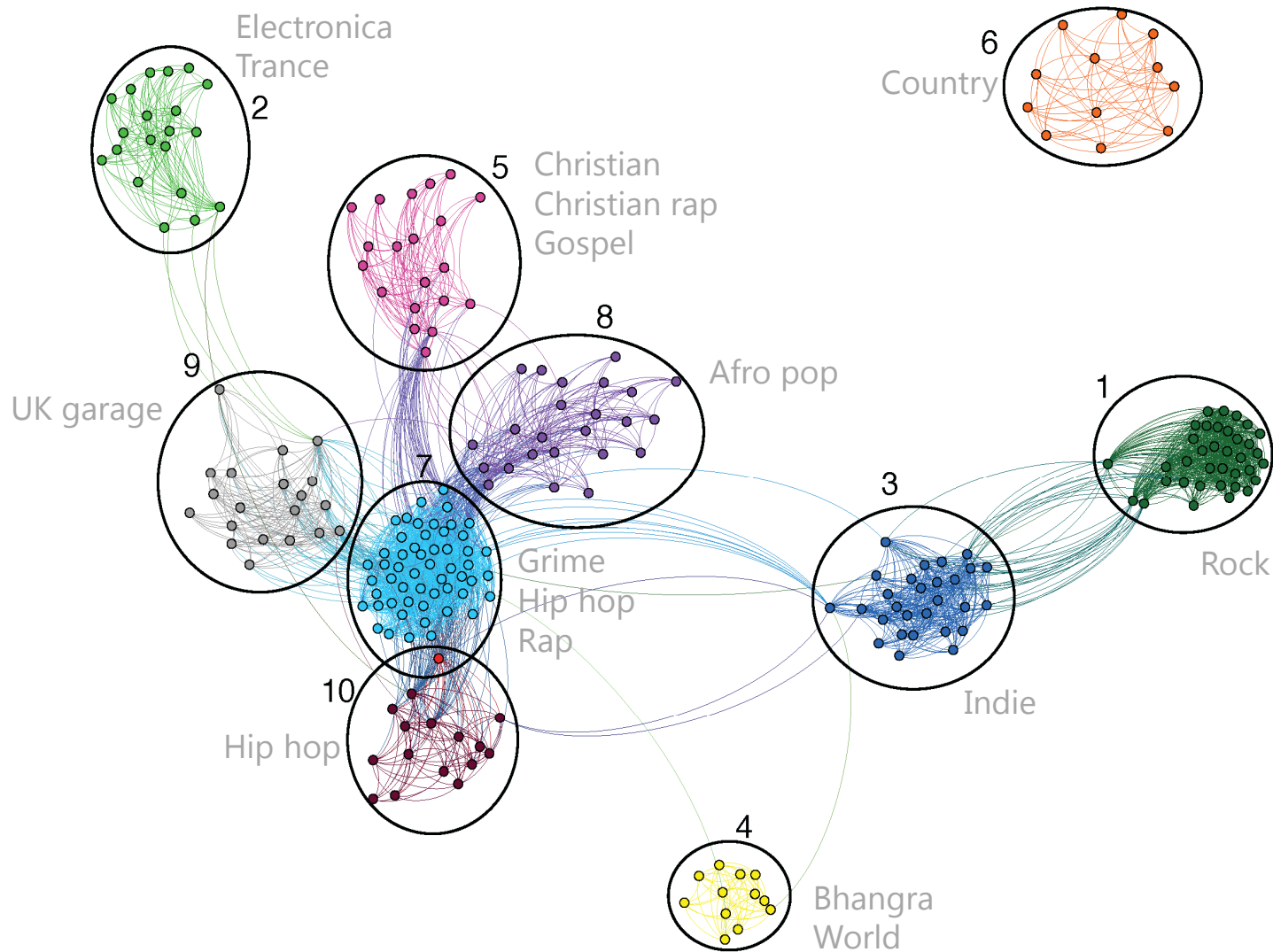
Unit Developmental and Educational Psychology
Institute of Psychology, Leiden University

With Prof. Carolien Rieffe and colleagues

How do children interact on a
playground?

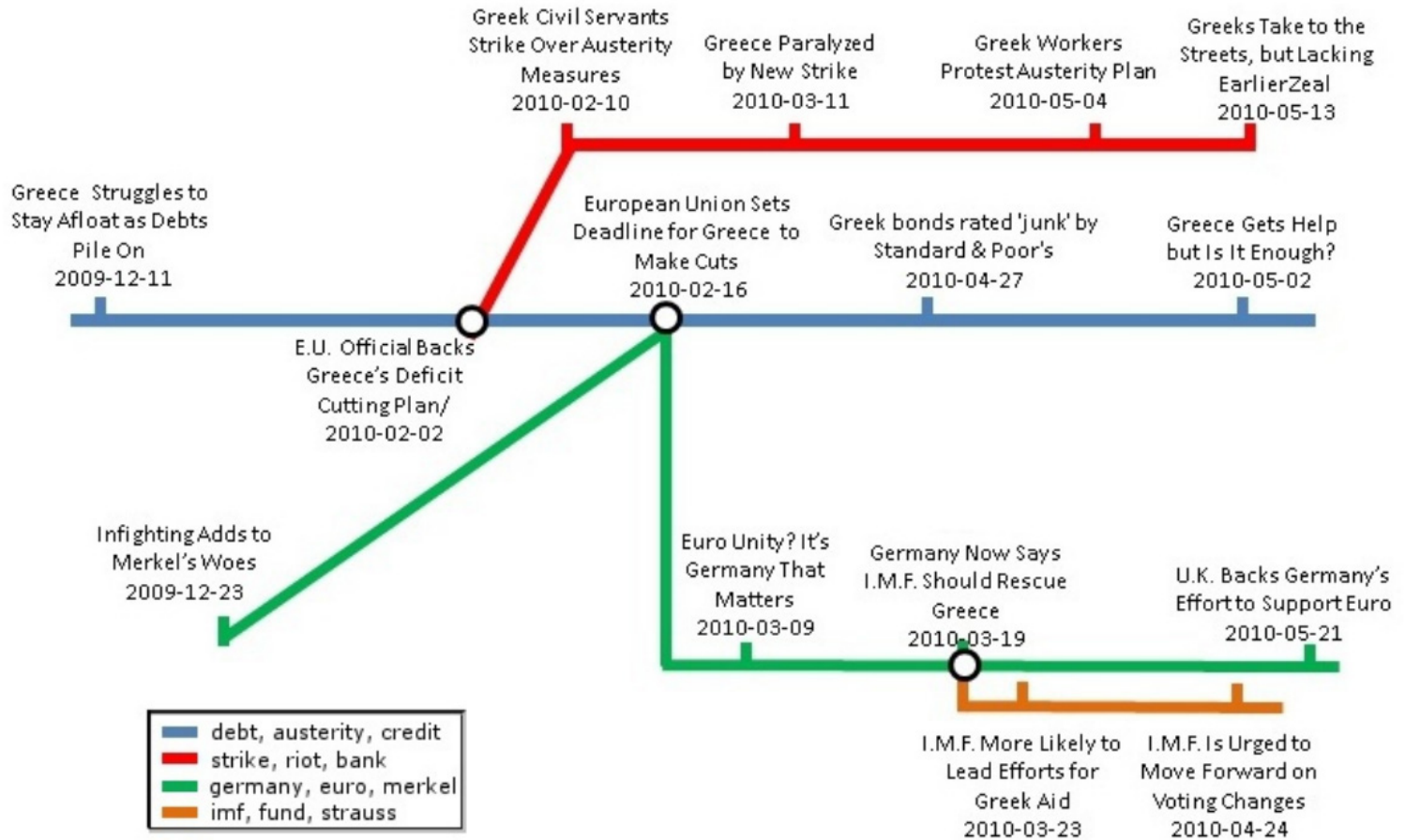
- Proximity data has been collected
- Communities? Changes over time?

Description-driven community detection



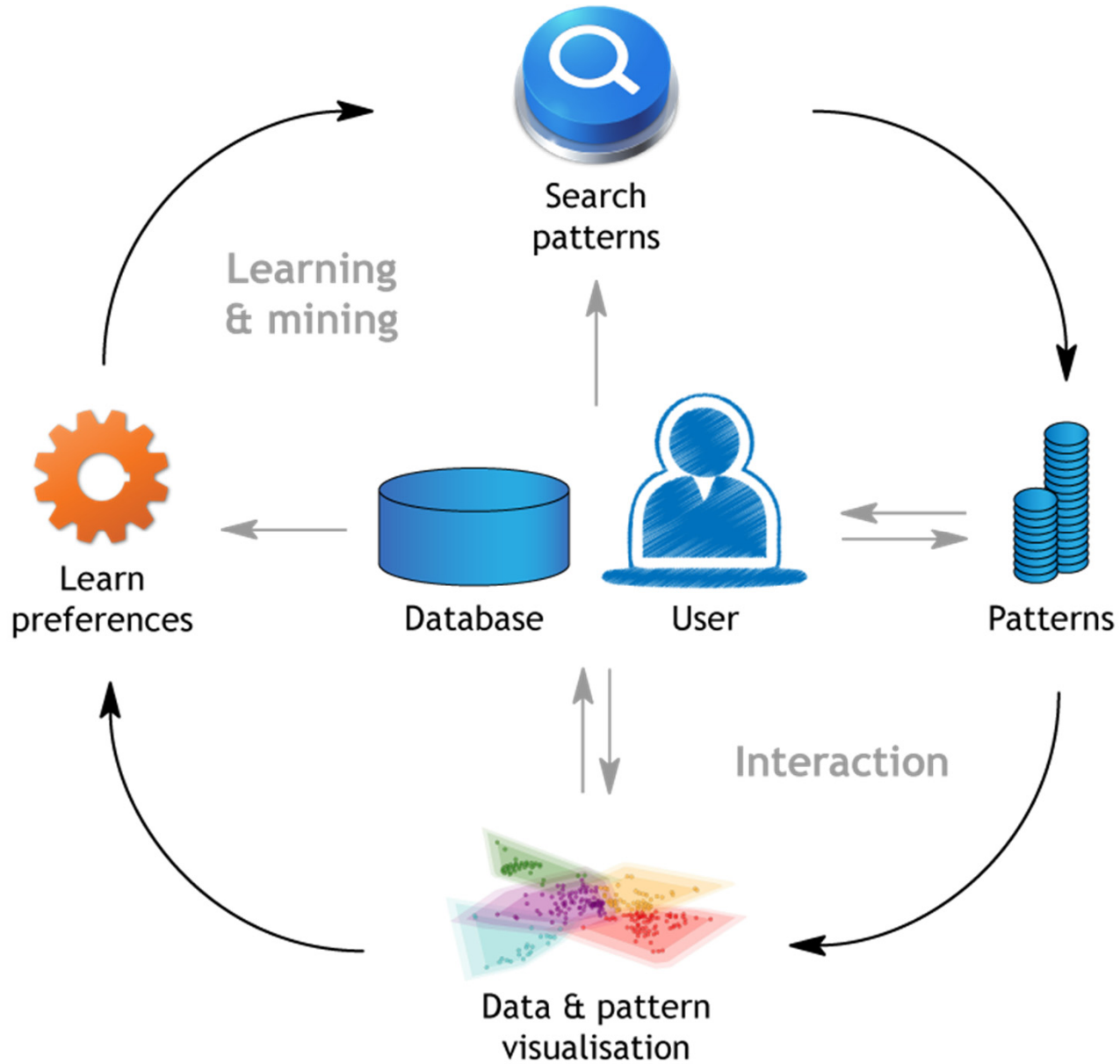
Builds on existing framework written in C++

Metro maps for pattern visualisation



<http://metro.ezyang.com/>

Mine, interact, learn, repeat





www.patternsthatmatter.org

m.van.leeuwen@liacs.leidenuniv.nl, office 148