



# Facilities activity during lockdown

Analysis of pseudo-anonymized  
data regarding people's habits

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01

# Inception

Define CQs and gather resources



# PURPOSE

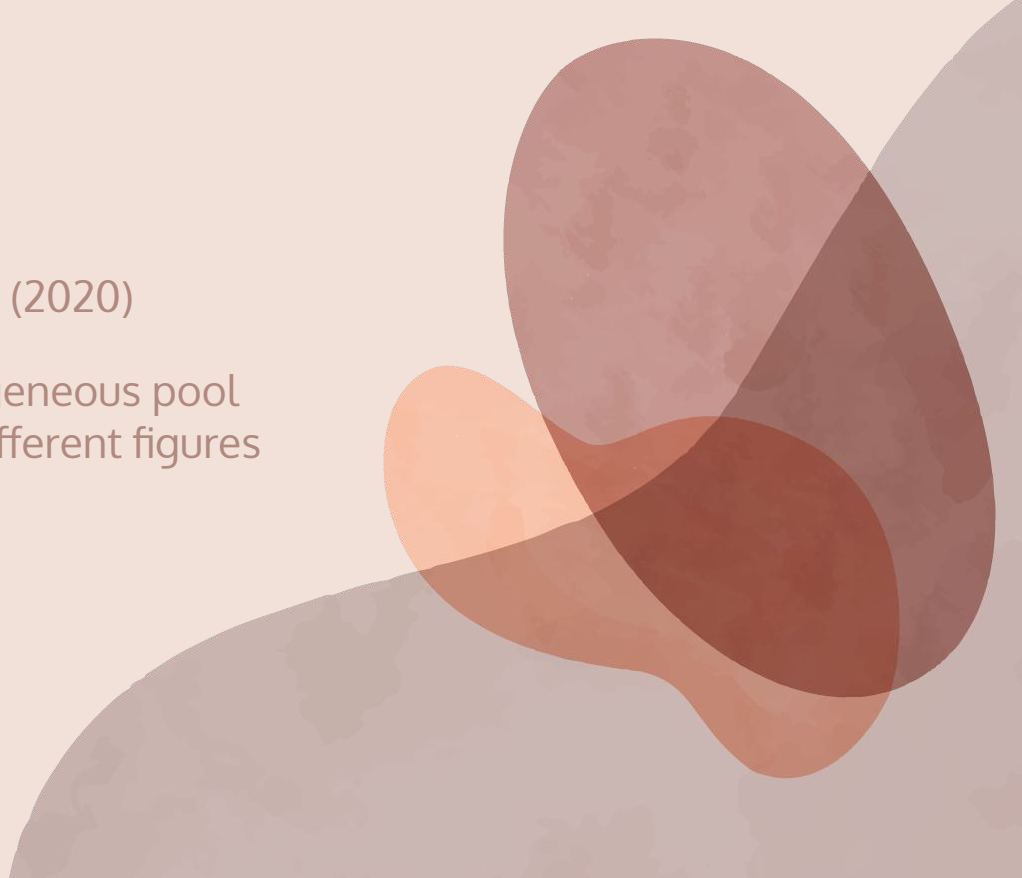
Find ways to exploit data in order to  
discover curious and interesting  
patterns

# Domain of Interest

Where? Data-driven

When? November 13th - December 11th (2020)

Who? The data comes from an heterogeneous pool of students and can be exploited by different figures for research purposes



# PERSONAS AND SCENARIOS



Angela  
Public transport  
employee



Marco  
Shop owner in the city  
center



Luca  
Public administration  
employee

# EXTRACTING COMPETENCY QUESTIONS



RAW  
CQs

What is the average  
profile of my shop's  
customer?

How often do people  
come to my shop?

KERNEL  
CQs

Profile, Customer,  
Shop

Person, Shop

ANALYSED  
CQs

Common: Person, Establishment  
Core: Person Information  
Contextual: POI

Common: Person, Establishment  
Core: VisitPlace  
Contextual: POI



# O2

## Informal modeling

Generate ER model and filter datasets

# ANALYZING THE CQs

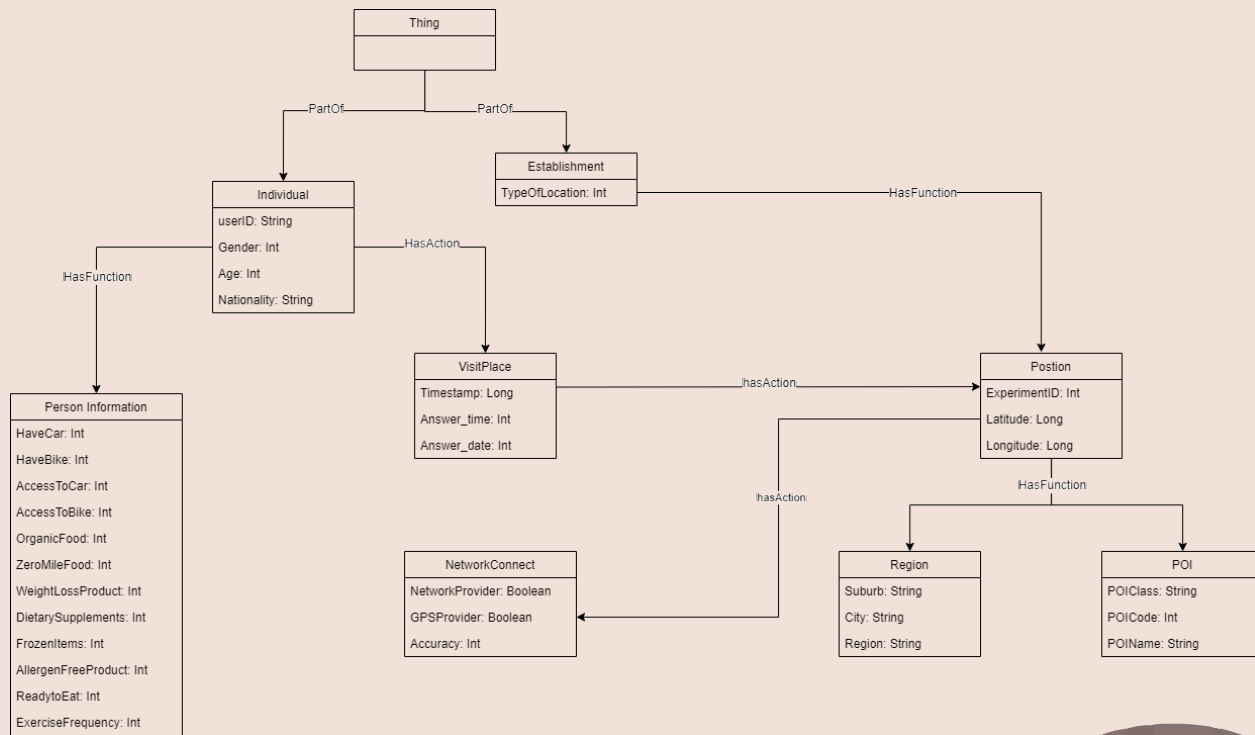
	Common Kernal Concepts			Core Kernal Concepts			Contextual Kernal Concepts		
CQs	Object	Function	Action	Object	Function	Action	Object	Function	Action
1.1	Person				Person Information			POI	
1.2	Person				Person Information				
1.3	Person, Establishment					VisitPlace		POI	
2.1	Establishment					VisitPlace			
2.2	Person, Establishment					VisitPlace			
2.3	Person, Establishment			Position					
3.1	Establishment			Position		VisitPlace			
3.2	Person				Person Information				
4.1	Establishment			Position		VisitPlace		Region	
4.2	Establishment					VisitPlace			
5.1	Establishment					NetworkConnect			
5.2	Establishment			Position				POI	



# BUILDING THE ER

EType	Description	Relation	Data Properties
Participant	A common Etype describing a human living	It's a PartOf Thing and also a superclass of Person Information ( HasFunction ) and VisitPlace with NetworkConnect ( HasAction)	userID: String Gender: Int Age: Int Nationality: String
Establishment	A common Etype describing a location	It's a PartOf Things and also a superclass of Position ( HasFunction )	TypeOfLocation: Int
Position	A Core Etype describing detail about a location by GPS coordinate	It's a Function of Establishment since every place will have a coordinate , therefore it inherit all the attributes of Establishment It's also a superclass of Region and POI ( hasFunction )	ExperimentID: Int Latitude: Long Longitude: Long
Person Information	A Core Etype describing "about" properties of a human	It's a function of Person since all person will have their information.	HaveCar: Int HaveBike: Int AccessToCar: Int AccessToBike: Int OrganicFood: Int ZeroMileFood: Int WeightLossProduct: Int DietarySupplements: Int FrozenItems: Int AllergenFreeProduct: Int ReadytoEat: Int ExerciseFrequency: Int
VisitPlace	A Core Etype describing an action to go to specific place	It's an Action of Person Etype and also it's an admissible action to a position since Person can visit any place	Timestamp: Long Answer_time: Int Answer_date: Int
NetworkConnect	A Core Etype describing an action to connect to specific type of network	It's an Action of Person Etype and also it's an admissible action to a position since Person can perform connection network at any place	NetworkProvider: Boolean GPSProvider: Boolean Accuracy: Int
POI	A Contextual Etype describing the specific name of the location by code of OpenStreetMap	It's an Function of a Position since we will know the name of a street, store,... when we know their coordiante.	POIClass: String POICode: Int POIName: String
Region Thing	A Contextual Etype describing the neighbor of the location The most generic object of all item	It's an Fuction of a Position since we can know in which neighbor ( city, region, suurb ) we are in if we know the GPS coordinate. The parent Etype of everything	Suburb: String City: String Region: String N/A

# ER MODEL GENERATION





O3

# Formal modeling

Generate ETG and align datasets

# LANGUAGE AND SCHEMA ALIGNMENT



## Schema alignment

Align ETG elements to foundational primitives using intermediate concepts

# K

## Language alignment

Map informal terms to formal concepts with a defined meaning

# SYNTACTIC HETEROGENEITY

0%

DATA VALUE  
FORMAT  
MISALIGNMENT

0%

DATA TYPES  
MISALIGNMENT

0%

DATA VALUE  
LANGUAGE  
MISALIGNMENT



O4

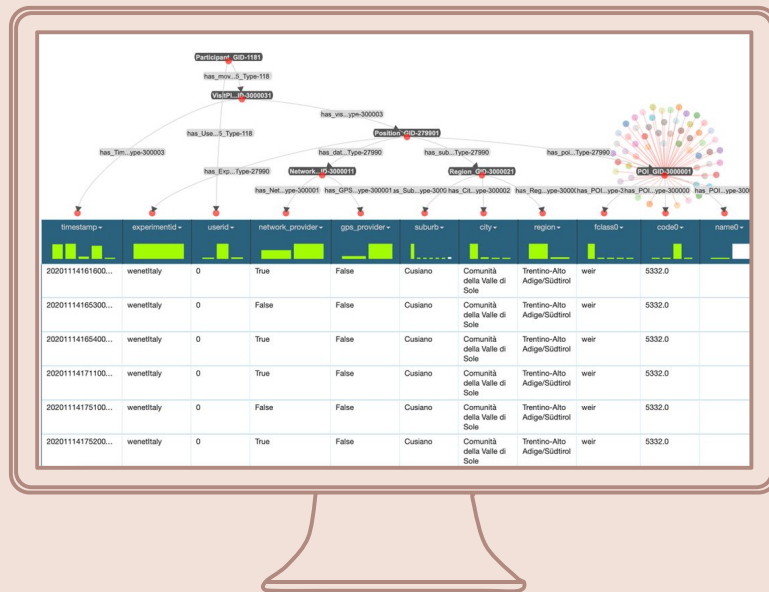
# Data integration

Build final EG

# DATA MANAGEMENT

Since we worked with quality dataset made by the same organization, no Semantic Heterogeneity problems were found.

We didn't encounter any problem during the merging of the knowledge and data layers, so the entity alignment task proceeded without issues.



THANKS FOR  
YOUR ATTENTION

The background features abstract, organic shapes in a muted orange on the left, a dark brown shape at the bottom center, and a light pink shape on the right. The text is centered in a dark grey, sans-serif font.



# REFERENCES

- Github repository: [https://github.com/tuanct1997/KDI\\_2021\\_Facilities-activity-in-lockdown](https://github.com/tuanct1997/KDI_2021_Facilities-activity-in-lockdown)
- KDI course site: <https://unitn-kdi-2021.github.io/unitn-kdi-2021-website>
- Images:
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