

High School Contact Network

1. Curation Rationale

Authors: Rossana Mastrandrea, Julie Fournet, Alain Barrat [1]

Purpose: Comparing different contact patterns of high school students. The results are published in [1].

Domain: (Face-to-face) social network

Contents: The contacts between students in a high school in Marseilles, France. This is a snapshot of all students in the high school.

Node and Edge Semantics: Each node represents one high school student. Each edge represents one contact between the two students.

Types: undirected, multi-graph, unweighted, temporal, homogeneous

2. Dataset Collection, Preprocessing and Annotation

2.1 Data Collection

Data collection mechanism: wearable sensors that exchange ultra-low power radio packets in order to detect close proximity of individuals wearing them [2]. Each individual wore a sensor device during the 5-day experimental period. The information on face-to-face proximity events detected by the wearable sensors was relayed to radio receivers installed throughout the high school. The face-to-face proximity of two individuals wearing them can be assessed over an interval of 20 seconds with a probability in excess of 99%.

Raw data description: The raw data contains all the sensor packet exchange records stored in the radio receivers inside the high school during the experimental period.

Network sampling: The data contains students who agreed to participate in this experiment during Dec. 2-6, 2013.

2.2 Data Preprocessing

Network construction: Edges are set up in a temporal resolution of 20 seconds: two individuals are considered to be in contact during a 20s time window if their sensors exchanged at least one packet during that interval, and the contact event is considered over when the sensors do not exchange packets over a 20s interval.

Data cleaning: Not exist

Data filtering: Not exist

Network transformation: Not exist

Attribute transformation: Anonymize the name of the students.

Data splits: Not exist

2.3 Instance Demographics

All instances are high school students in Marseilles, France. 53.5% are self-identified as female, 44.3% are self-identified as male, and genders of other students remain unknown.

2.4 Data Annotation

Not exist

3. Uses

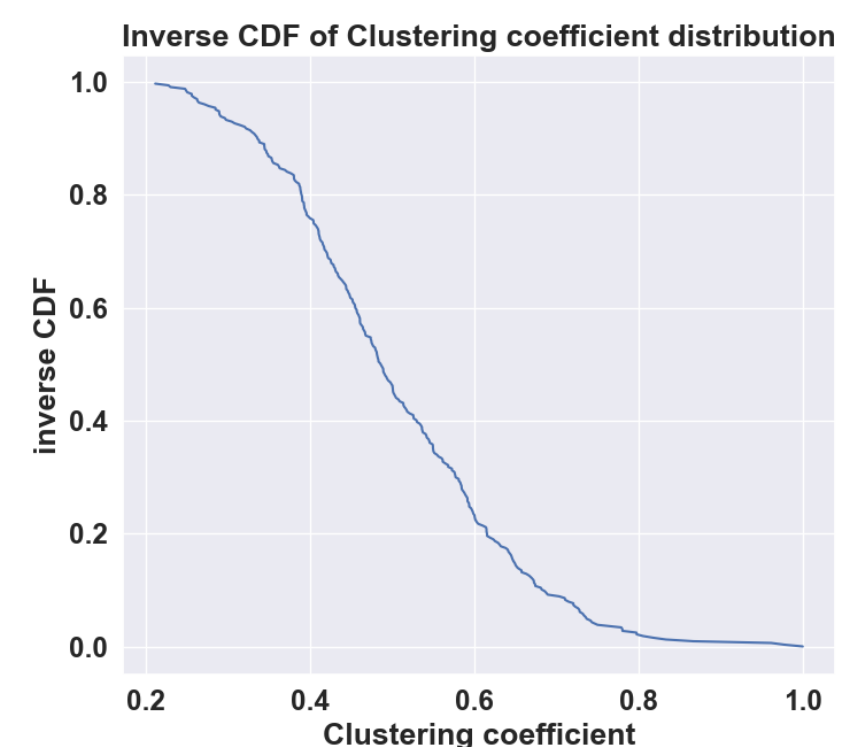
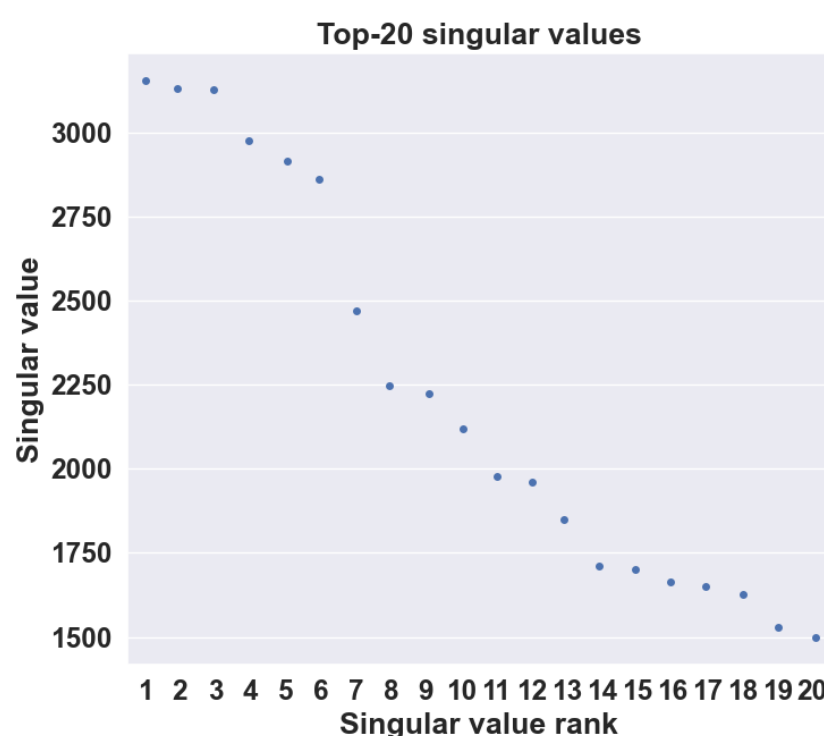
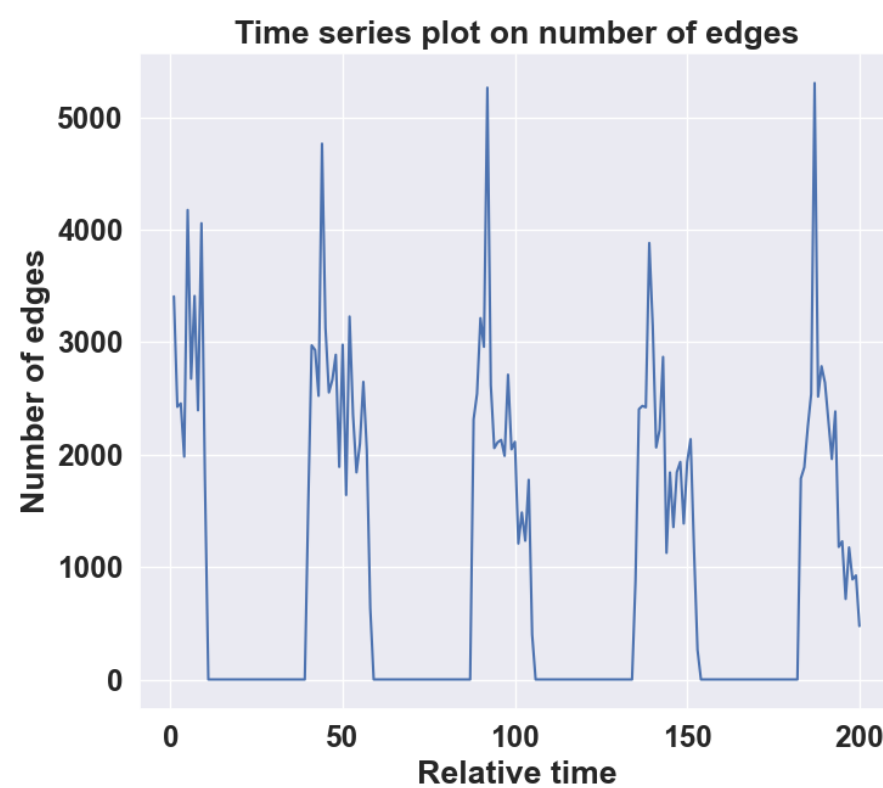
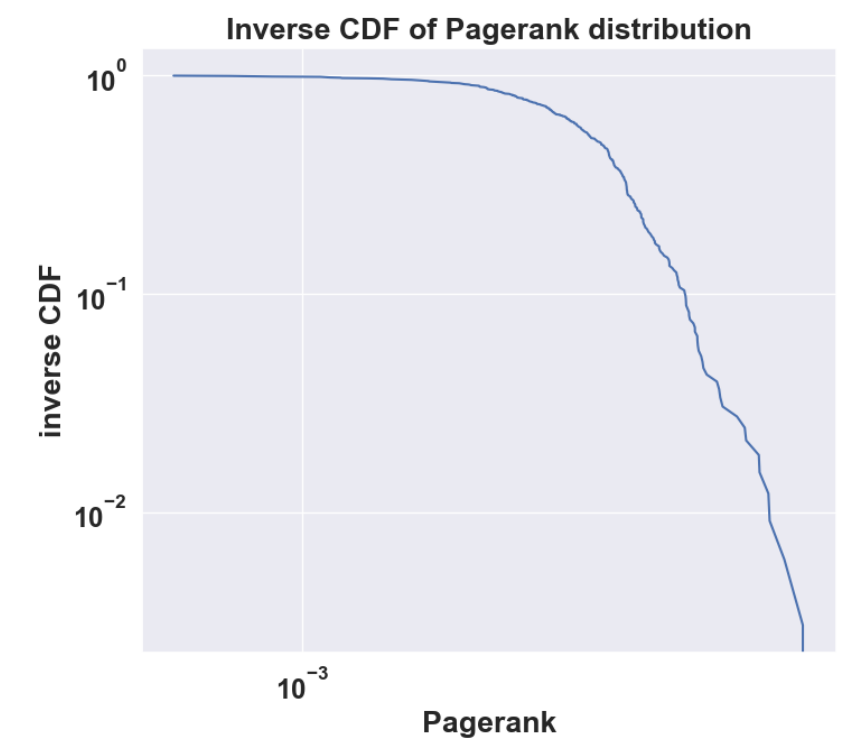
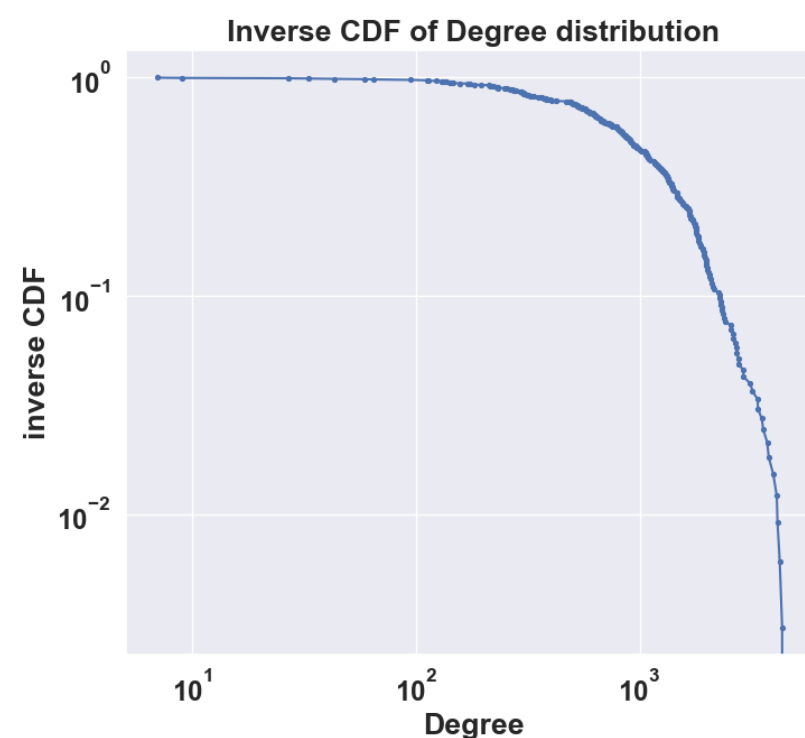
Primary intended uses: Studying face-to-face social connections

Other uses: Studying vaccination strategy within high schools; Studying community structure of high school students; Studying inter-class and cross-class contacts in high schools.

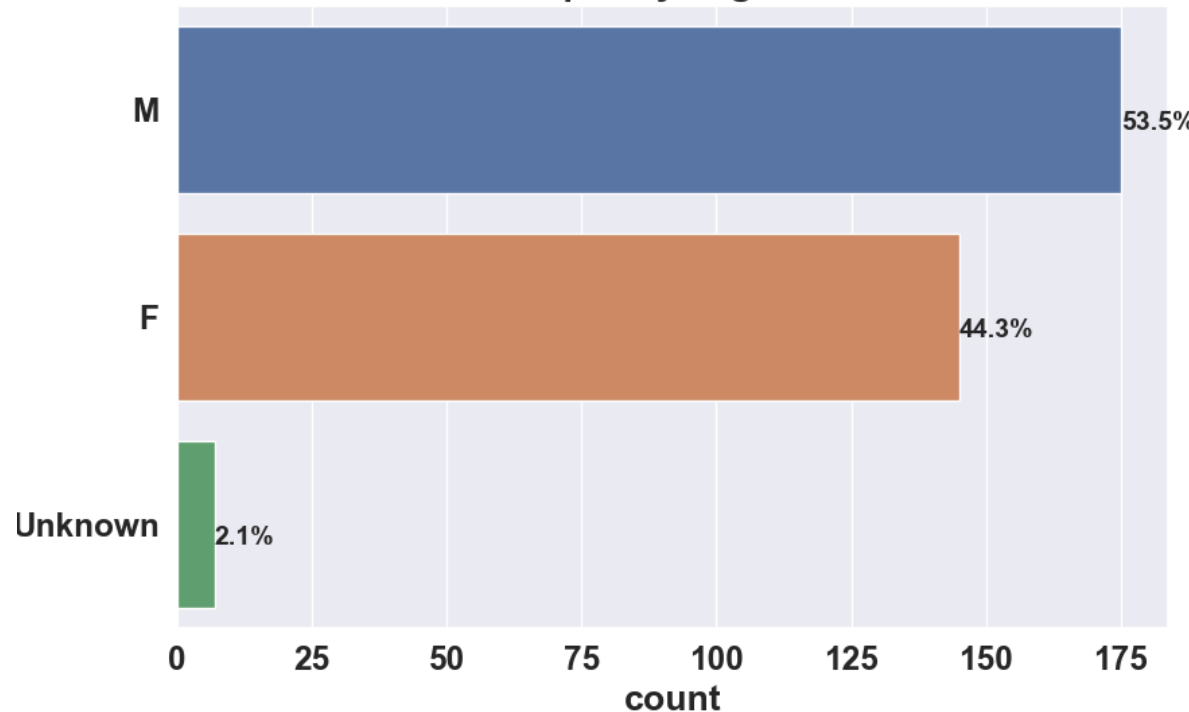
4. Network Statistics

Table 1 Point Statistics

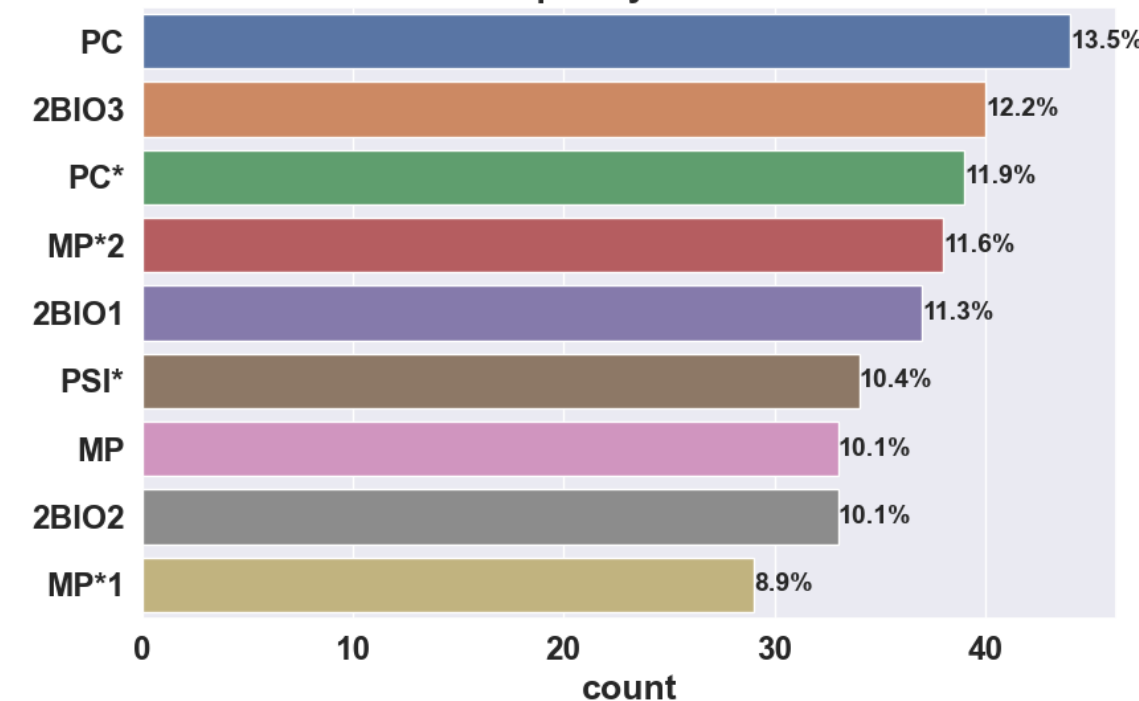
Size of nodes	327	Avg. triangle count	313.9
Size of edges	188508	Avg. clustering coef.	0.50
Avg. degree	1153.0	Assortativity	0.47
% in LCC	100%	Algebraic connectivity	6.96
Max k-core	24	Spectral Radius	3153.16
(Tail) power law exponent	1.21		



Frequency of gender



Frequency of class



[1] R. Mastrandrea, J. Fournet, A. Barrat, Contact patterns in a high school: a comparison between data collected using wearable sensors, contact diaries and friendship surveys. PLoS ONE 10(9): e0136497 (2015)

[2] <http://www.sociopatterns.org/>