applications *fraud*

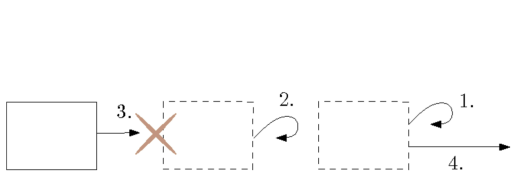
introduction to *network analysis in Python* (*NetPy*)

Lovro Šubelj
University of Ljubljana
19th Sep 2019

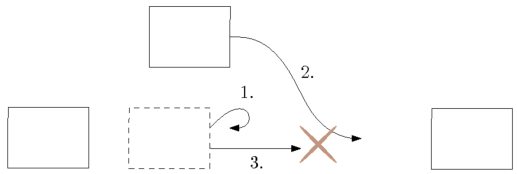
fraud *insurance*

— *staged traffic accidents* with *false insurance claims*

— common characteristics of *staged crash schemes*



swoop & squat

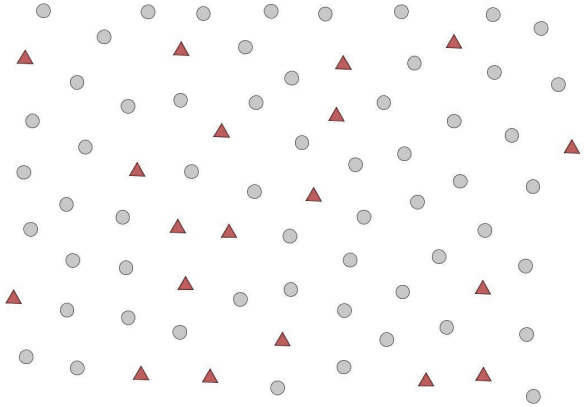


drive down

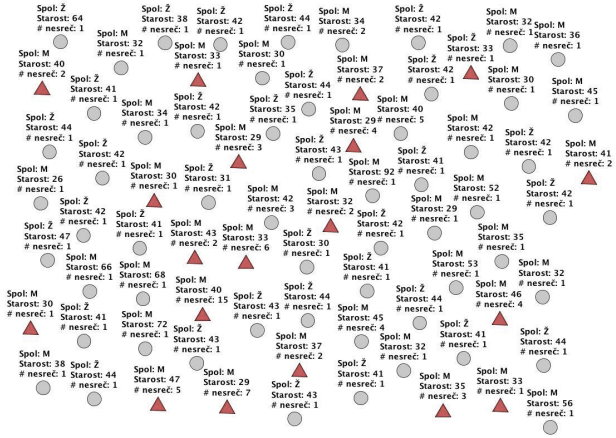
— $\approx 10\%$ of insurance claim outcome due to fraud

— ≈ 100 million € yearly loss in Slovenia due to fraud

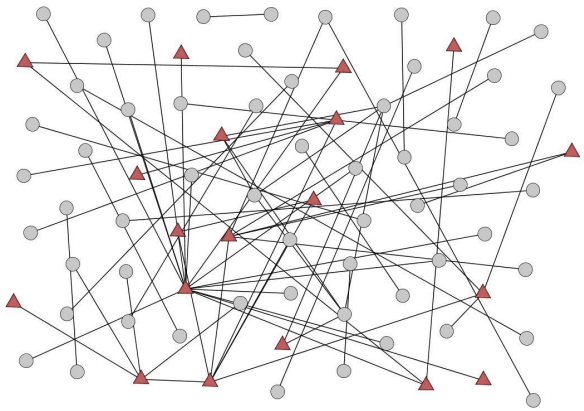
fraud *detection*



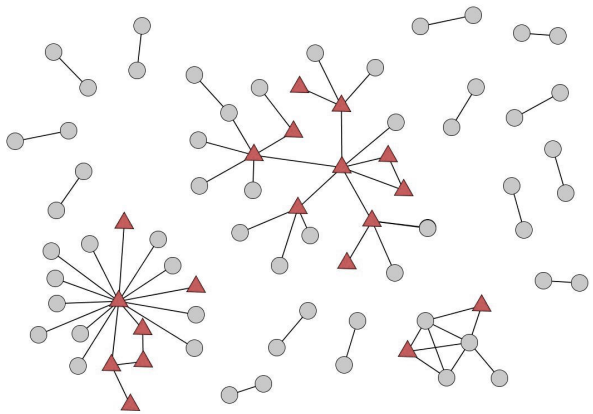
1. *fraudulent participants* in traffic accidents



2. *analysis/mining* of *participants metadata*



3. *participants collaboration* as *social network*

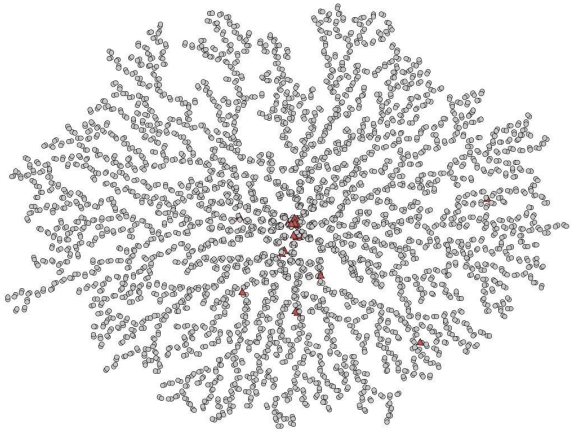


4. *suspicious participants* by *naked eye*

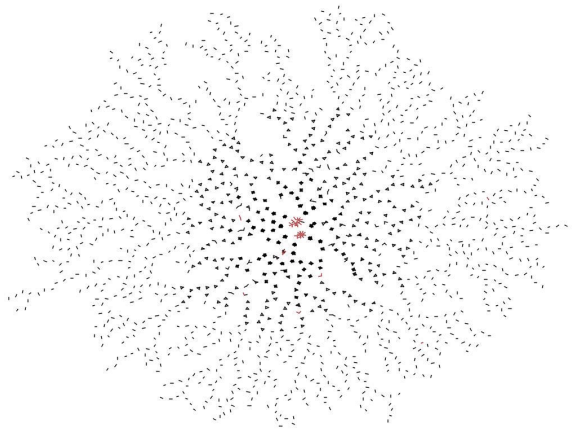
---

*participants metadata from semi-structured police records

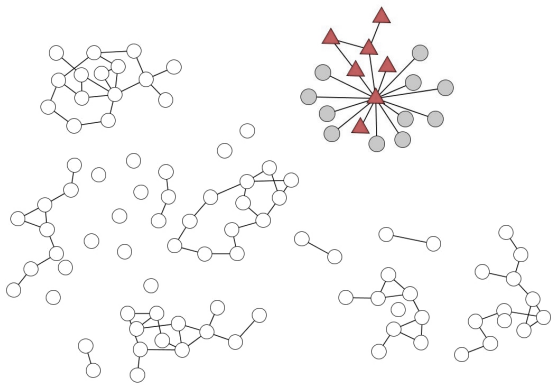
fraud *system*



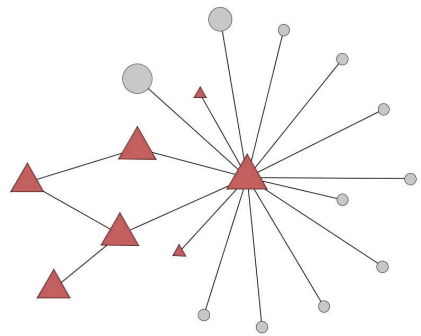
1. *drivers, passengers, witnesses network*



2. *network connectivity* around *critical point*



3. *suspicious components* by *link rewiring*



4. *suspicious participants* by *link analysis*

† ≈ 1500 accidents in Slovenia from period 1999-2008 [ŠFB11]

fraud *references*

Lovro Šubelj, Štefan Furlan, and Marko Bajec.

An expert system for detecting automobile insurance fraud using social network analysis.
Expert Syst. Appl., 38(1):1039–1052, 2011.