

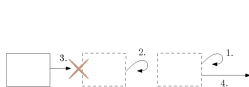
applications *fraud*

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

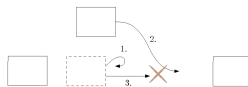
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4th July 2024

fraud *insurance*

- *staged traffic accidents* with *false insurance claims*
- common characteristics of *staged crash schemes*



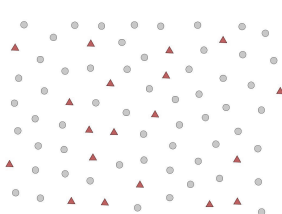
swoop & squat



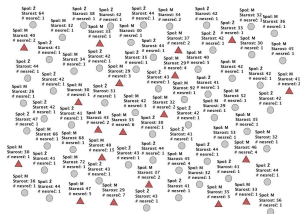
drive down

- $\approx 10\%$ of insurance claim outcome due to fraud
- ≈ 100 million € yearly loss in Slovenia due to fraud

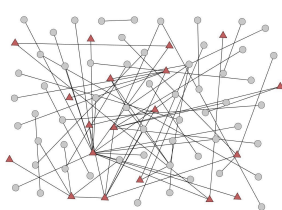
fraud *detection*



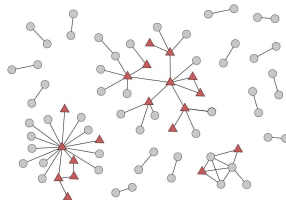
1. *fraudulent* participants in traffic accidents



2. *analysis/mining* of participants metadata



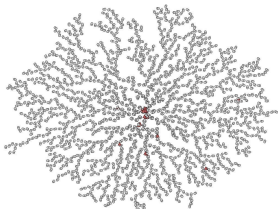
3. *participants collaboration* as social network



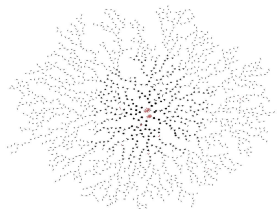
4. *suspicious participants* by naked eye

* participants metadata from semi-structured police records

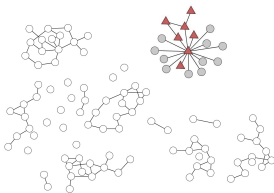
fraud *system*



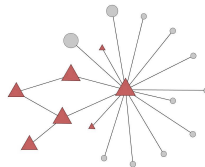
1. *drivers, passengers & witnesses network*



2. *network connectivity around critical point*



3. *suspicious components vs random graphs*



4. *suspicious participants by link analysis*

[†] \approx 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.