

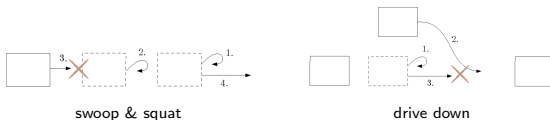
applications *fraud*

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

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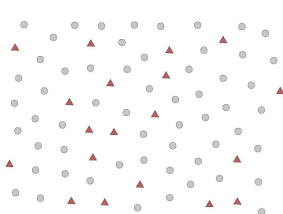
# fraud *insurance*

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

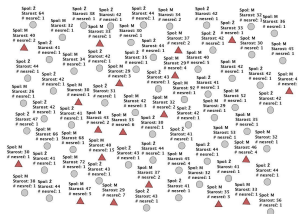


- $\approx 10\%$  of insurance claim outcome due to fraud
- $\approx 100$  million € yearly loss in Slovenia due to fraud

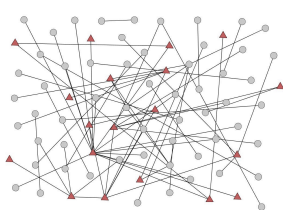
# fraud *detection*



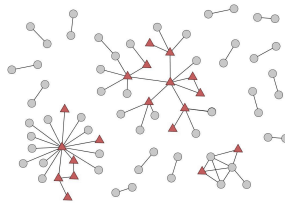
1. *fraudulent* participants in traffic accidents



2. *analysis/mining* of participants metadata



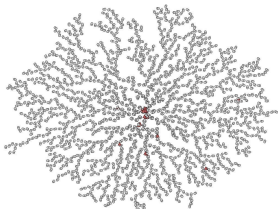
3. *participants* collaboration as social network



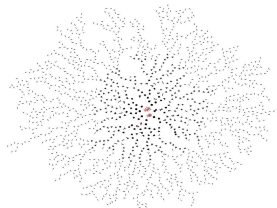
4. *suspicious* participants by naked eye

\* participants metadata from semi-structured police records

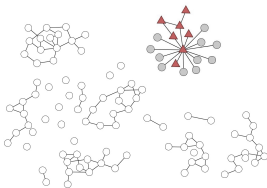
# fraud *system*



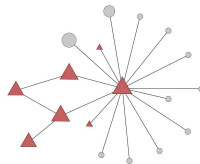
1. *drivers, passengers, witnesses* network



2. *network connectivity* around *critical point*



3. *suspicious components* by *link rewiring*



4. *suspicious participants* by *link analysis*

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<sup>†</sup>  $\approx$  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.