Blockchain and social network: technologies, analyses and applications

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Research themes

• Social network analysis:
  • motif mining
  • influencer analysis
  • distributed community detection
  • blockchain-based social networks

• Blockchain technology:
  • rewarding and rating systems
  • development of new models for blockchain
Community detection in OSN
Motif detection in social networks

- parametric motifs:
  - stars
  - chain
  - ping-pong
  - P-triangle
  - one way couple.

- composite motifs (meta-motifs)
  - in-star
  - out-star.
Motifs in transaction graphs

- Mining complex motifs in transactions graphs
  - Bitcoin
  - Ethereum
- Goal:
  - understand users’ behavior in crypto-economy
  - defining deanonymization techniques
HELIOS: H2020 future OSN project

Network 1

Network 2

Connection descriptor:
- strength
- trust
- created
- last use
- ...

Contextual communication layers are isolated

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Exploiting real datasets

- Facebook ego network dataset
- Facebook groups dataset
- Steemit transactions
  - a blockchain based social network
- Instagram
- Bitcoin and Ethereum blockchain
Blockchain technology

- development of blockchain based system
  - auditable access control systems
  - rating systems
  - token based rewarding systems
- new blockchain models:
  - inter-ledger protocols
  - support for complex queries on blockchain
Collaborations

- IIT CNR: Paolo Mori
  - blockchain technology
  - mining patterns in transactions graph
- Trinity College, Dublin: Kevin Koidl
  - social network mining
- CERTH, Salonicco: Symeon Papadopoulos
  - distributed learning systems