

# Blockchain and social network: technologies, analyses and applications

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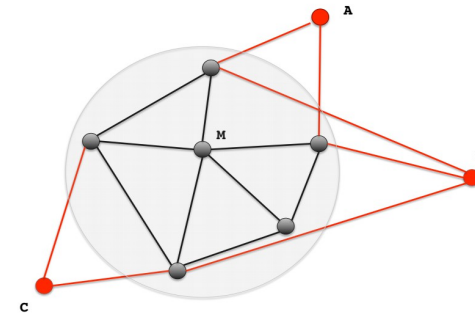
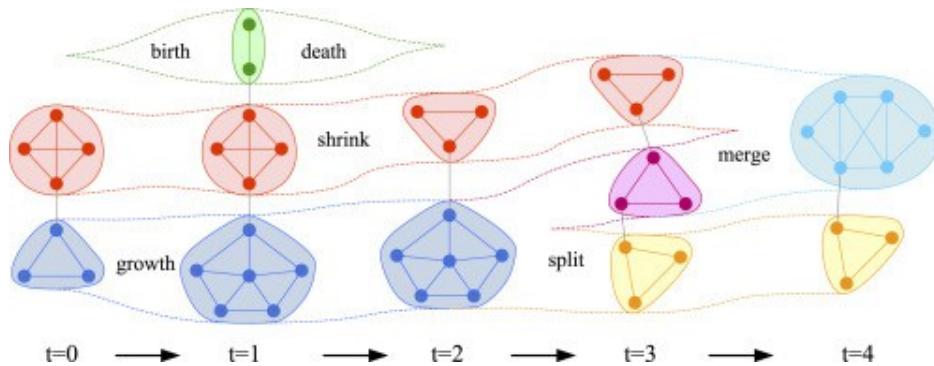
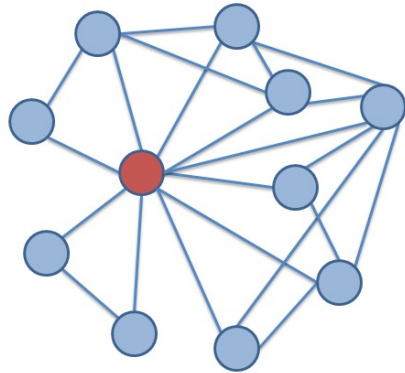
PhD Students: Andrea Michienzi, Andrea Lisi,  
Moshin Ur Rahman, Adrian Spataru (co-tutela)

# Research themes

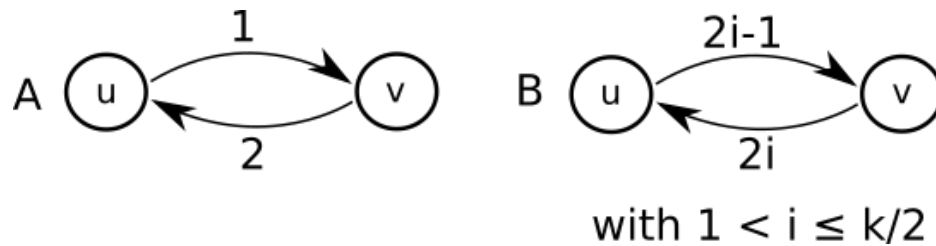
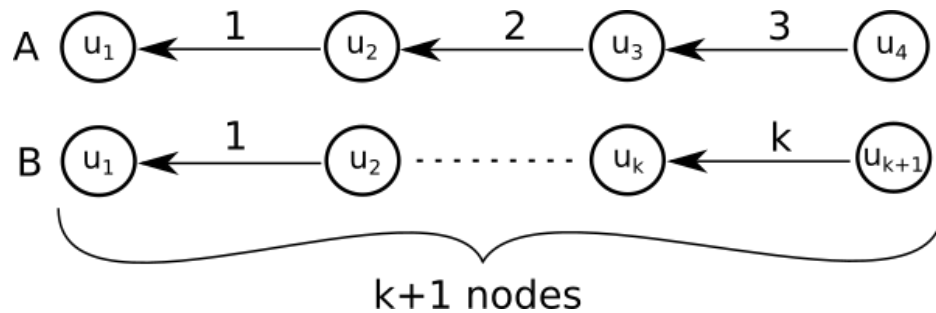
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- Social network analysis:
  - motif mining
  - influencer analysis
  - distributed community detection
  - blockchain-based social networks
- Blockchain technology:
  - rewarding and rating systems
  - development of new models for blockchain

# Community detection in OSN



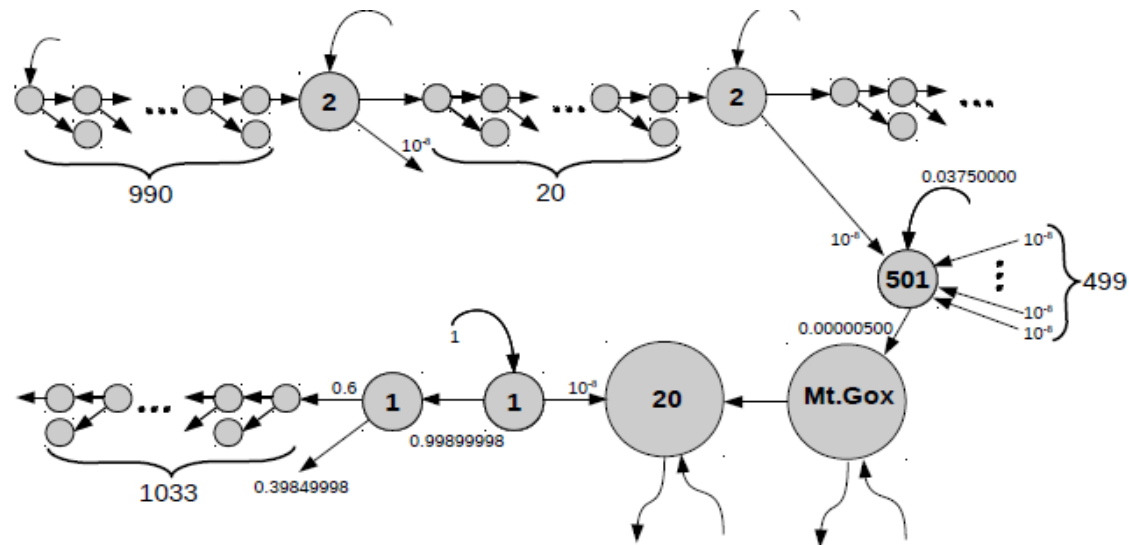
# Motif detection in social networks



- parametric motifs:
  - stars
  - chain
  - ping-pong
  - P-triangle
  - one way couple.
- composite motifs (meta-motifs)
  - in-star
  - out-star.

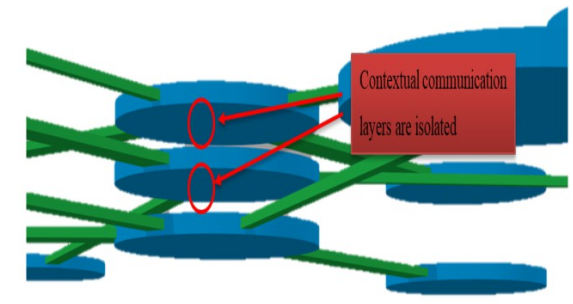
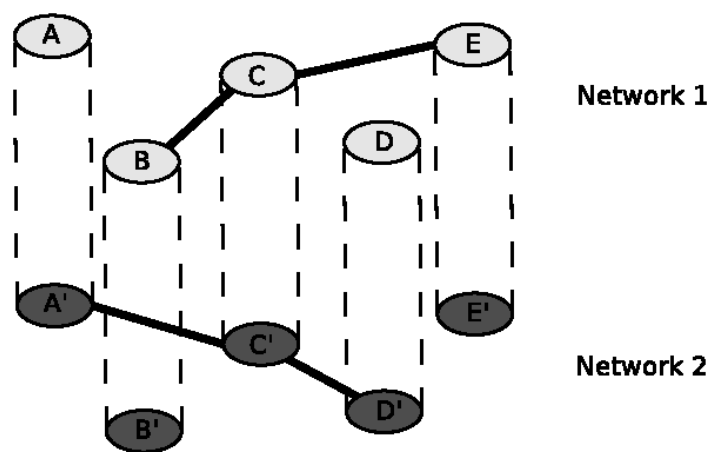
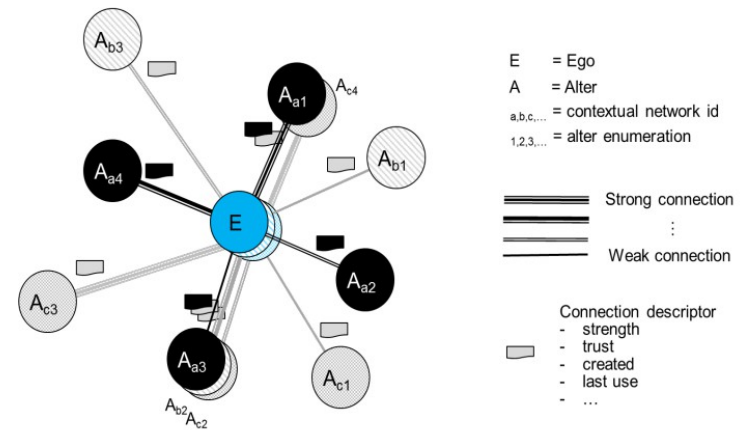
# Motifs in transaction graphs

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- Mining complex motifs in transactions graphs
  - Bitcoin
  - Ethereum
- Goal:
  - understand users' behavior in crypto-economy
  - defining deanonymization techniques

# HELIOS: H2020 future OSN project



# Exploiting real datasets

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

# Blockchain technology

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- 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

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- IIT CNR: *Paolo Mori*
  - blockchain technology
- Dep. Computer Science, Cambridge: *Damiano Di Francesco Maesa*
  - mining patterns in transactions graph
- Trinity College, Dublin: *Kevin Koidl*
  - social network mining
- CERTH, Salonicco: *Symeon Papadopoulos*
  - distributed learning systems