ANGEL: efficient, and effective, node-centric community discovery in static and dynamic networks

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Our approach is primarily designed for social networks analysis and belongs to a well-known subfamily of Community Discovery approaches often identified by the keywords bottom-up and node-centric

1 GOALS

- we propose ANGEL , an algorithm that aims to lower the computational complexity of previous solutions while ensuring the identification of high-quality overlapping partitions

2 PRELIMINARIES

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3 CHALLENGES

- complex networks researchers agree that it is not possible to provide a single and unique formalization that covers all the possible characteristics a community partition may satisfy

4 PREVIOUS WORK / CITATIONS

- (Coscia et al. 2012): where the authors propose DEMON an approach whose main goal was to identify local communities by capturing individual nodes perspectives on their neighbourhoods and using them to build mesoscale ones
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- **This Work:**
  - Introduces a Label Propagation algorithm
    - Least complex kind of algorithm
    - Gives good quality results
  - In contrast to DEMON it focuses on lowering the time complexity while at the same time increasing the partition quality
  - Properties:
    - It produces a deterministic output
    - Allows for a parallel implementation

5 DEFINITIONS

- During each iteration, the label of v is updated to the majority label of its neighbours. As the labels propagate, densely connected groups of nodes quickly reach a consensus on a unique label

6 OUTLINE / STRUCTURE

- ...

7 EVALUATION

- ...

8 CODE

- ...

9 RESOURCES

- ...