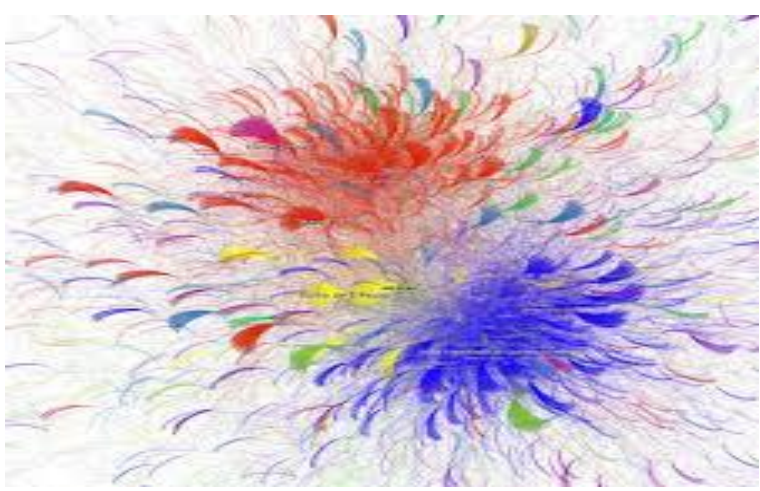


# Analysis of Group/Community Formation in Dynamics Networks

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## Introduction

### Complex Networks



**Motivation:**  
Desire for Understanding of structured systems

Fig. 1 - Complex Networks

## Goals

- Analyze and compare two social networks based on real data, to study their behavior and the formation of different groups within each structure.

## Metodology

Bibliographical Research  
Crawdad (processing Dataset)  
Exploration Gephi tools

Community Detection (Clusters)

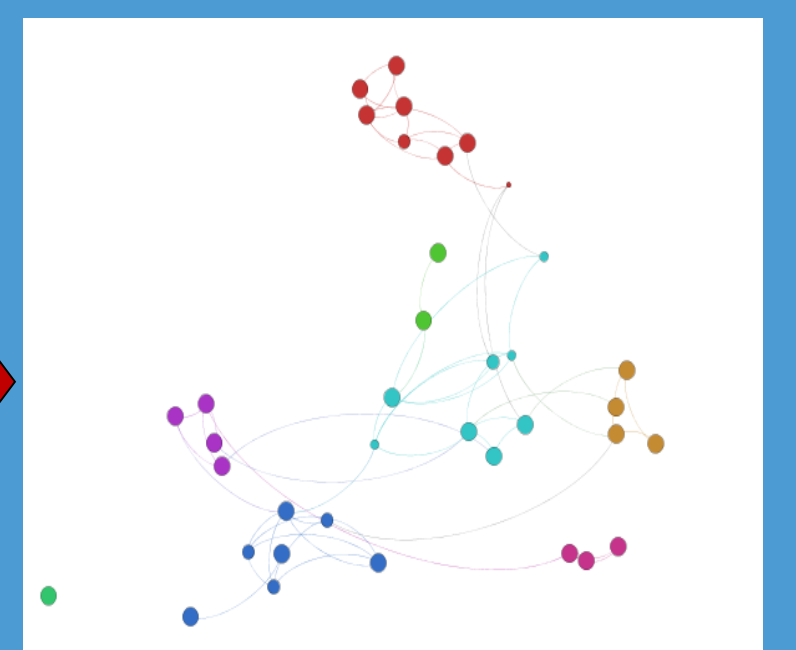
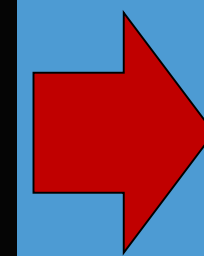
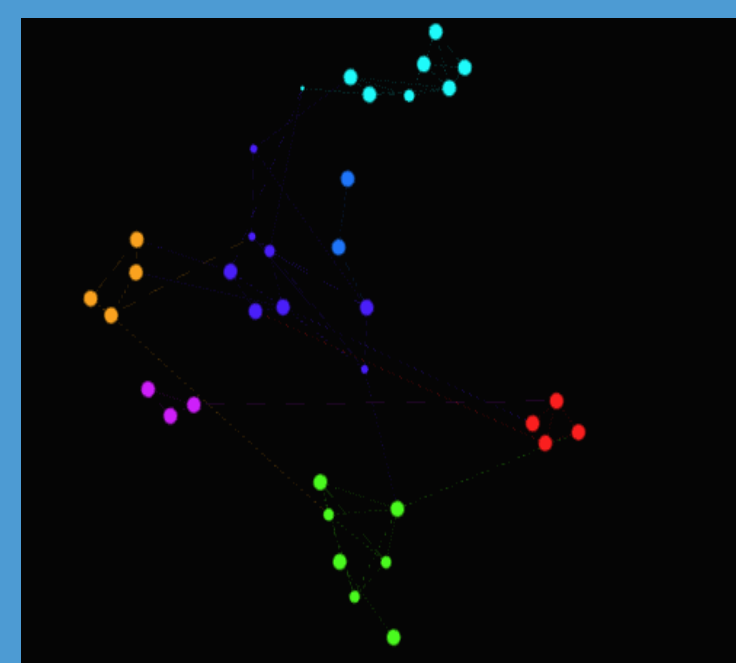
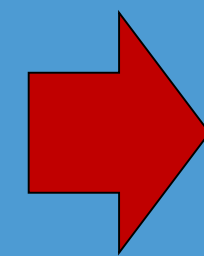
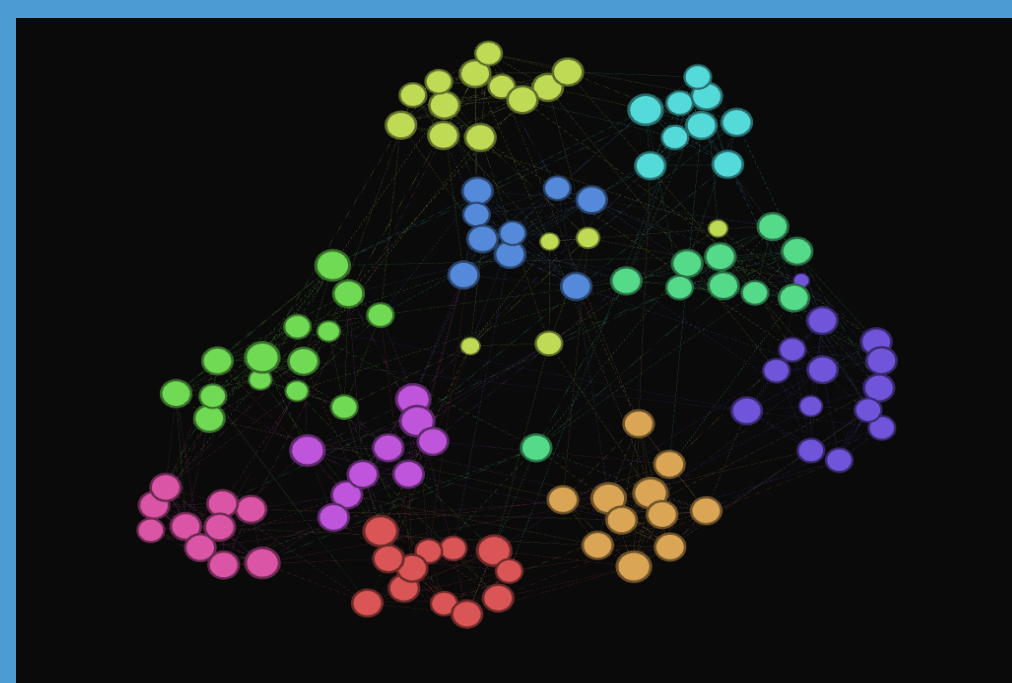
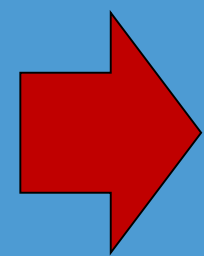
Network Analysis (Centricity, Density)

Louvain Method "Modularity"

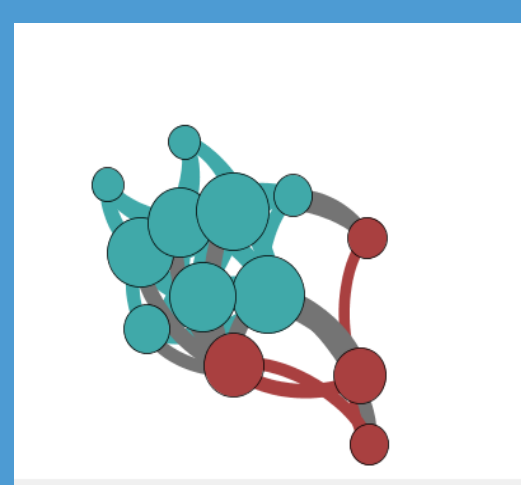
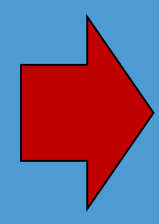
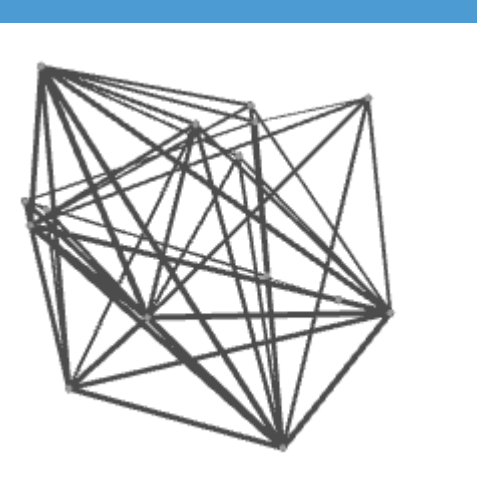
Degree Distribution  
Betweenness Centrality

Path length  
Cluster Coefficient

## Results



a) American College Football Network



c) SocialBlueconn Network - Friendship

Network	Type	Nodes	Arestas	Communi	Modu	Path Length	Degree Distribution
SocialBlue Conn	Ind. SW	115	613	10	0,65	2,508	10.61
American College Football	Ind. SW	15	92	2	0,125	1,657	6,400

c) Comparative analysis table of the networks SocialConn and ACF

## Conclusions

- The analysis of a network from the actual data of the platform Crawdad and Newman Repository.
- Community detection/analysis of Central vertices, whereas most centrality measures used
- Future Works: Implement an algorithm to detect communities at the UHLT email system

## References

[1]X. Fan Wang; G. Chen; "Complex networks: Small-World, Scale-Free and Beyond" IEEE Circuits and Systems magazines, First Quarter 2003