
College network

Course Assignment N.13

Paolo Deidda (paolo.deidda@usi.ch)
Andrea Luca Perugini (andrea.perugini@usi.ch)
https://github.com/USI-Projects-Collection/DA-College_network.git

April 17, 2025

Contents

1	Data Analysis	2
1.1	Setup and Data Loading	2
1.2	Data Exploration	2
1.2.1	Basic Statistics	2
1.2.2	Message Frequency Over Time	2
1.3	Network Construction	2
1.3.1	Degree Analysis	2
1.3.2	Identifying Isolated and One-Way Nodes	2
1.4	User Analysis	2
1.4.1	Top Senders and Receivers	2
1.4.2	PageRank Centrality	2
1.4.3	Edge Reciprocity	2
1.5	Temporal Analysis	2
1.5.1	Messages by Weekday	2
1.5.2	Top User Activity Analysis	2
2	Graph Analysis	3

Introduction

This document outlines the structure of the analysis on a dataset of private messages exchanged on a UC Irvine social network.

To run the code and reproduce the figures or outputs, please refer to the README.md file for setup and execution instructions.

1 Data Analysis

1.1 Setup and Data Loading

1.2 Data Exploration

1.2.1 Basic Statistics

1.2.2 Message Frequency Over Time

1.3 Network Construction

1.3.1 Degree Analysis

1.3.2 Identifying Isolated and One-Way Nodes

1.4 User Analysis

1.4.1 Top Senders and Receivers

1.4.2 PageRank Centrality

1.4.3 Edge Reciprocity

1.5 Temporal Analysis

1.5.1 Messages by Weekday

1.5.2 Top User Activity Analysis

2 Graph Analysis