

# NETWORK SCIENCE FOR DATA ANALYTICS

2029282-1/2024-I

## MINI PROJECT– PROJECT PROPOSAL

### 1. GOAL OF THE MINI PROJECT

To identify a paper with an application of network science and try to reproduce it, so you can apply some of the concepts and methods studied in class.

### 2. DESCRIPTION

The goal of this assignment is to attempt to reproduce an application of network science (NS) that has been published in a paper. The selected paper must have been published in a specialized and well-known journal.

This homework is to be done by the **project teams** previously assigned, and it includes two main components:

### 3. DELIVERABLES:

**A: WRITTEN REPORT.** A written report, which must be presented in the template of the IEEE Transactions on Network Science and Engineering Journal available at

<https://template-selector.ieee.org/secure/templateSelector/format?publicationTypeId=1&titleId=152&articleId=1>.

In this short report, you will summarize the problem that was solved in the paper. This report should not exceed one page and will need to include at least the following sections:

#### **PAPER CITATION:**

You need to include the selected paper that reports the work that you will attempt to replicate.

#### **PROBLEM DESCRIPTION:**

Briefly summarize the problem that was solved.

#### **NETWORK SCIENCE METHODS:**

Describe the type(s) of network science models and methods were used in the proposed solution.

#### **NETWORK DATA SET:**

Describe the data set that was used. It is very important that you make sure that the data set is available, so you can analyze it.

#### **RESULTS:**

Briefly describe the results of the work reported in the paper.

**TEAM MEMBERS' CONTRIBUTIONS.** The roles, activities and contributions of each of the team members during the development of this delivery must be concisely described. Please keep in mind that in the different deliveries, you could rotate the roles so that everyone takes a turn and thus gains experience of the different roles. Also, you may want to allocate the crucial roles within the team to the people who would like to take them, are best qualified to carry them out through prior or current experience, or even to people who would like to take on an unfamiliar role in order to gain experience of performing that role. However, each team will need to select a **team coordinator**, who besides supervising and motivating the members of the working group will be the direct communication channel between the professors and the team.

The teams are expected to internally solve any issue or conflict that arises among the members of the team. However, if an issue or conflict could not be solved inside the team, the team coordinator is responsible for reporting it to the professors

The contributions of the team member may be provided in a table as shown below.

Team member	Role	Activities/contributions

## **USE OF ARTIFICIAL INTELLIGENCE TOOLS (PREPARING THIS DELIVERABLE)**

As a reminder, you are allowed to use Artificial Intelligence (AI) tools, such as ChatGPT, to help gather information and generate ideas or source code, but you may not copy and paste information directly from the AI tool and present it as your own without citing it. You are responsible for the information you submit based on an AI query and for ensuring that it does not contain misinformation, unethical content, or violate intellectual property laws.

You must properly document and cite the use of artificial intelligence tools to ensure academic integrity. When applicable, you are expected to include a statement in your assignment describing which AI tool you used and how you used it. For example, "*ChatGPT was used to draft approximately 50 percent of this document and to provide review assistance. AI-produced content was edited for accuracy and style*".

### **B. ORAL PRESENTATION:**

Present and discuss the proposed work in class. Therefore, you will need to briefly present the mini project proposal in class. Accordingly, a presentation of 5 slides needs to be prepared, which will include: *the paper citation, the network science methods, the network data set and the results*.

### **1. SUBMISSION**

The files, in pdf format, need to be submitted as a compressed folder via Google Classroom. Only **one submission per team** is required. Make sure ONLY ONE COPY of the deliverable is submitted, thus, you will need to coordinate within your team who will be in charge of submitting the assignment. Students are advised to retain a copy of every assignment submitted for their own record.

#### **File naming:**

The team must use the following file naming convention for the assignment:

- **NS research paper:** The research paper with the work to reproduce must be submitted and named “NS4DA-MPP-paper-“ appending the team ID. For instance, if the team ID is 7, then the file must be named “NS4DA-MPP-paper-7.pdf”.
- **Mini project proposal:** “NS4DA-MPP-doc-“ appending the assigned team ID. For example, “NS4DA-MPP-doc-7.pdf” for team ID 7.
- **Mini project presentation:** “NS4DA-MPP-pres-“ appending the assigned team ID. For example, “NS4DA-MPP-pres-7.pdf” for team ID 7.

These three files should be submitted in a compressed folder named “MPP-“ appending the team ID. For instance, if the team ID is 7, then the file must be named “MPP-7.pdf”.

#### **Files to submit:**

1. **NS research paper:** the selected paper that reports the work that you will attempt to replicate.
2. **Written report:** a document with the details of the mini project proposal.
3. **Presentation file.** The presentation file to support the oral presentation in class.

#### **IMPORTANT:**

Each team will need to deliver the actual oral presentation in class. To help you prepare and deliver your oral presentation, you are advised to see the tutorial: **Effective Presentation Skills Tutorial** available at <https://www.niu.edu/presentations/index.shtml>

Please be aware that though some of the tips in this tutorial are intended to in-person presentations, most of them still apply for on-line presentations.

#### **2. DEADLINE (DATE/TIME)**

##### **Written report:**

4:00pm, Wednesday, March 13th, 2024

##### **Oral presentation:**

*Presentation file:* 4:00pm, Wednesday, March 13th, 2024;

*Oral presentation in class:* Wednesday, March 13th, 2024.