A2 – S4 – 2023/2024 – II.2415
Advanced Algorithms and Programming
Semester Project

TSN: Tailored Social Network

General presentation

The project aims to design and develop a TSN (Tailored Social Network) platform that offers advanced functionalities beyond traditional platforms like Facebook. The platform must be based on a graph structure, inspired by the FOAF (Friend of a Friend) Ontology (Fig. 1), enabling users to connect, interact, and share content in a more personalized and intuitive manner.

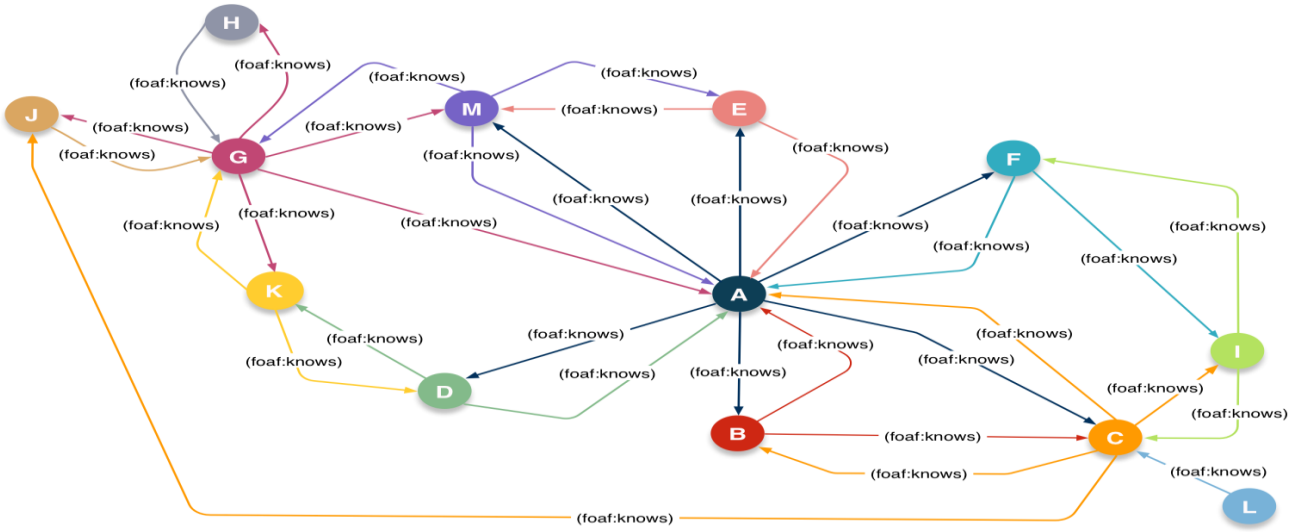

Fig. 1: A FOAF Ontology with only the *Knows* Property

The TSN platform can take into consideration, and not limited to, the following features:

- Graph-Based Networking: Implement a graph-based data structure to represent user connections, interests … and relationships,
- Recommendation: Develop an intelligent recommendation procedure based on user interactions, interests … and preferences,
- Privacy Controls: Provide users with fine-grained privacy settings to control the visibility of their posts and personal information,
- Customizable User Profiles: Allow users to create rich, customizable profiles with *multimedia* content and detailed information,
- Intuitive User Interface: Design an intuitive user interface for seamless navigation and interaction,
- Messaging and Notifications: Implement real-time messaging and notification features to keep users updated on their network activities,

- Content Sharing and Collaboration: Enable users to share various types of content (text, images, videos) and collaborate on projects or events,
- ...

Specifications / Tasks

To develop this project, you must follow the following methodology:

- Discuss the idea and scope the project (N.B. This is an open-end project, so each team of students decide to which extent they want reach and the functionalities they want to implement in their TSN. Of course, Of course, the more flawless features, the best project will be)
- Propose an exhaustive data structures that will help you to model all the functionalities that will be offered by your TSN platform ...
- Design and write the needed algorithms according to your propositions for finalizing the project [i]
- Show how to make use of a simple database in your project [ii]
- Build and implement the needed TSN platform (Backend)
- Build and implement an appropriate interface (frontend) to the TSN platform [iii]
- Provide a reasonable testing of your TSN platform [iv]

Technologies to use

You're free to use the appropriate technologies, after justifying your choices, for developing the TSN platform: A Programming Language, an SQL DB or Graph DB, Frameworks for back end and front end, GIT, APIs …

Managerial Issues

- Work in teams up to 3 students (maximum) within the same group of T.P.
- Deliver at the end of the project a report summarizing all the work of the team during the project
- A presentation of the project will be scheduled at the end of the semester to evaluate and validate your work in the project

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[i] Special interest is given to the complexity of your algorithms, so you need to calculate this complexity for each proposed algorithm

[ii] You can download a dataset (FOAF for example) from open data sites, and then write a simple script to store the appropriate data for your project in a simple database

[iii] The more and best services of the TSN platform, the best your project is

[iv] The more concrete testing, the best your testing is