CSE3021 Social and Information Networks
Digital Assignment 1. Winter 2021-22.

by
Sharadindu Adhikari, 19BCE2105

The topic I've chosen is: **Semantic Web**

1. **Social Networks and the Semantic Web** (Peter Mika, IEEE, 2004)

   A formal, web-based representation of social networks is both a necessary infrastructure need in a significant Semantic Web application. One of the most promising approaches of social intelligence on the web is the use of SNA to web data. The authors present two breakthroughs in the collecting and processing of information regarding online social networks in this research. First, they demonstrated a system for gathering social network data that blends classic web mining techniques with Semantic Web crawling. Second, they've demonstrated how some of SNA's analytical approaches may be used to analyse an online community, specifically the core network of Semantic Web researchers.

   Thereafter, the authors outlined three improvements in utilising the potential of semantically-enriched network data in this paper: (1) a representation ontology for social networks and connections (2) a hybrid online data collecting system that blends classic web mining approaches with Semantic Web data collection (2) a case study demonstrating some of the methodologies used in Social Network Analysis, a discipline of sociology dealing with relational data, to analyse this data.

2. **Flink: Semantic Web technology for the extraction and analysis of social networks** (Peter Mika, ELSEVIER, 2005)

   From the outset, the ability to post and gather personal information (such as our friends' and colleagues' hobbies, works, and opinions) has been a key aspect in the web's success. Surprisingly, the web only became an active arena for socialisation for the majority of users in the year 2003. The rapid rise of a new breed of web sites, collectively referred to as social networking services, occurred in that year (SNS). Friendster was the first to market, attracting over 5 million registered users in just a few months, followed by Google and Microsoft launching or announcing comparable services.

   The Flink system for extracting, aggregating, and visualising online social networks is presented by the authors in this study. Flink uses semantic technology to reason with personal data taken from web pages, emails, publishing archives, and FOAF profiles, among other electronic information sources. The information gathered is utilised to conduct social network analysis and create a web-based presentation of the community.

They used the Semantic Web research community to demonstrate their unique method for social science based on electronic data.

3. **Classification Analysis in Complex Online Social Networks Using Semantic Web Technologies** (Marek Opuszko & Johannes Ruhland. IEEE. 2012)

   People and computers may interact and exchange information using the Semantic Web. Different machine learning applications have been created using Semantic Web technology. The ability to construct elaborate metadata descriptions for any problem area based on pre-defined ontologies is particularly useful. The authors of this research looked at how a semantic similarity measure based on pre-defined ontologies could be used as an input to a classification analysis in the context of social network analysis. A connection prediction is made between participants in two real-world social networks, which might be used as a recommendation system. Different sorts of relations and nodes are present in social networks.

   The authors used a semantic similarity metric as well as established techniques to assess prediction performance. The findings suggest that the accuracy of prediction based on semantic similarity is equivalent to traditional approaches, and that data mining on complex social networks using ontology-based metadata is a very promising strategy.

   Nonetheless, the results show that the data structure has a significant impact on the prediction. The results of the common neighbourhood baseline predictor also reveal that Semantic Web technologies do not always outperform traditional methods. The ontologies utilised in this paper, on the other hand, were rather simple and served to test a new approach to social network analysis. The findings suggest that Semantic Web tools could help with analyses of highly interconnected data.

4. **Combining Provenance with Trust in Social Networks for Semantic Web Content Filtering** (Jennifer Golbeck. Springer. 2006)

   Social networks have grown in popularity across the internet, and the Semantic Web is brimming with social network data. FOAF (Friend of a Friend) is an OWL-based vocabulary for representing personal and social network information; FOAF-based data accounts for a major portion of all Semantic Web data. Users can utilise various ontologies within these social networks to annotate more information about their social connections.

   Making trust annotations to social relationships is simple on the Semantic Web. The authors provided a two-tiered strategy to integrate trust, provenance, and annotations in Semantic Web systems in this work. They presented an algorithm for inferring trust relationships in Semantic Web-based social networks utilising provenance information and trust annotations. Then they demonstrated FilmTrust, an application that personalises

the website by combining the computed trust levels with the provenance of other annotations. The FilmTrust technology harnesses trust to generate tailored movie recommendations and review orders. They feel that the success that can be achieved utilising this way of merging trust and provenance on the Semantic Web can be demonstrated by the outcomes acquired with FilmTrust.

5. **Applying and Inferring Fuzzy Trust in Semantic Web Social Networks** (Mohsen Lesani & Saeed Bagheri. Springer. 2022)

   Individuals can use social networks to find and get to know other people, as well as benefit from their knowledge. Semantic Web standard ontologies enable social network sites to make use of information from other social networks, allowing for their extension and integration, resulting in a massive social network. Because social networks are public virtual social spaces, they may contain a lot of information that isn't trustworthy to everyone. A technique is required to rate upcoming news, reviews, and comments from users on a specific subject, based on each user's preferences.

   There should be a feature for users to specify how much they trust a friend, as well as a mechanism to infer trust from one user to another who is not a direct friend of the user, so that a recommender site can use these trust ratings to show trustworthy information to each user from not only her or his directly trusted friends, but also from other indirectly trusted users. This paper presents an algorithm for inferring trust from a person to another person who is not directly connected in a social network's trust graph using fuzzy linguistic concepts.

   The technique is developed and compared against one that allows users to express their level of trust by entering a number in a specific range. While the imprecise nature of the trust concept makes writing and reading a linguistic expression for trust more natural for users than a number, the results show that the algorithm provides more precise information than the previous algorithm, particularly when contradictory beliefs must be composed and when a more precise inference is potentially possible when searching deeper paths. Because trust graphs and inference are abstract, they can be used in a variety of multi-agent systems.

6. **Spinning Multiple Social Networks for Semantic Web** (Yutaka Matsuo, et.al. ACM. 2022)

   Social networks play an essential role in AI research, particularly in the Semantic Web. Without our knowledge, social networks have a significant impact on our lives, and many applications are important to social networks. Social networks are critical in the Semantic Web to create a web of trust that allows for the assessment of information credibility and trustworthiness. The building of ontologies is also linked to social networks: for example,

if a large number of people share the same two conceptions, the two concepts may be related. Other Semantic Web uses include conflict of interest (COI) detection and information exchange on social networks.

The extraction and analysis of three types of social networks found at academic conferences were reported in this paper: user-registered knows networks, web-mined collaborator networks, and face-to-face meets networks. The powerful Web mining capability of Polyphonet demonstrably improves communication in academic societies. The Semantic Web relies heavily on social networks. Multiple network integration, often known as spinning social networks, is becoming increasingly required. The authors claimed that social network integration should be done based on the goals of the network. Execution of several case studies for various objectives using multiple networks will be part of future work. They believe that their study will benefit other social network studies, not just for the Semantic Web, but also for other artificial intelligence research.

7. **Improving learning management through semantic web and social networks in e-learning environments** (M. P. Cuéllar, et.al. ELSEVIER. 2011)

In recent years, internet social networks have emerged as significant platforms for exchanging knowledge and multimedia content. They aid in the sharing of common interests among groups of individuals. Any e-learning system, without a doubt, has an underlying social network, with teachers, learners, and learning resources as the key actors. The majority of e-learning software is centred on material distribution and group work, however Internet LMSs have more capabilities. Web Communities for Learning and their construction as Social Networks have recently been the subject of research. As a result, social network analysis can be used to infer group structures, create intelligent recommendation systems, and mine data.

The purpose of this research is to present a strategy for defining and interpreting learning management platforms as social networks. The authors created an ontology to incorporate information from several Learning Management Systems in order to accomplish a large generalisation. The ontology is then used to create a customised social network. This shift in an LMS's perspective could make it more difficult to do additional research on learners, teachers, and learning resources in order to gain a better knowledge of their social structure and, as a result, make or enhance decisions regarding the learning process.

8. **Accuracy of Metrics for Inferring Trust and Reputation in Semantic Web-Based Social Networks** (Jennifer Golbeck & James Hendler. Springer. 2004)

On the hypertext web, anyone can make any assertion they choose, with no restrictions on its correctness or honesty. Humans make several judgments depending on the appearance of a web page and the source of the content when reading it. Even if someone lies about

their sources, it is extremely simple to generate some information about the source. Content on the Semantic Web is a collection of statements that are not judged by their look or professionalism. Because the Semantic Web's underlying philosophy is to allow a computer to aggregate distributed statements about the same resource, the source of information is removed one step from the presentation.

While most research on the semantic web has concentrated on digital signatures, certificates, and authentication, more social ideas of trust that are based on reputation are beginning to gain traction. The authors presented an approach for obtaining locally derived reputation ratings from a Semantic Web Social Network in this study. They presented mathematical and experimental data that demonstrate the algorithm's ability to accurately deduce a node's reputation. They then went on to describe TrustMail, a network-based email rating system.

9. **Social networking on the semantic web** (Tim Finin, et.al. Emerald Insight. 2013)

The semantic web envisions an internet populated by intelligent entities and services that can communicate information, tasks, and knowledge utilising simple protocols and a rich knowledge representation language. RDF and OWL, two semantic web languages, are a promising start. The representation of social networks – individuals, their properties, and the relationships between them – was one of the first widely used applications of RDF. The FOAF ontology is the most extensively utilised on the web at this time due to the current interest in social networks and the quick applications to online virtual communities. The usage of FOAF as a test case for the wider problems and issues surrounding the adoption of semantic web concepts and technology is a smart place to start.

By linking machine-readable descriptions of people, i.e. FOAF documents, with published personal relationships, the authors presented a novel perspective on the semantic web. This adds to the semantic web's ontology-based perspective. They also presented a heuristic method for locating and discovering FOAF papers on the web, as well as extracting information about persons from these documents. This method allows for the fusion of information on a person from various papers, surpassing the boundaries of individual FOAF documents. The semantic web's examination of FOAF network patterns yielded unique social network topologies.

The constituent foaf:knows relations in FOAF networks provide a glimpse of the FOAF user community. More crucially, the patterns of linkage between FOAF documents provide a person with orientation to the traditional web of HTML documents. The display of densely connected FOAF networks is both instructive and enlightening. The approach proposed in this research can be used to discover existing and emerging online communities as the number of FOAF users grows.

10. **Towards Semantic Social Networks** (Jason J. Jung & Jérôme Euzenat. Springer. 2007)

    Computer-assisted social services such as tagging and sharing are common in today's web apps focused at a specific set of users. These services not only enhance and expand the functionality of their apps, but they also build a network of users and services that connects them to a larger online ecosystem. These social networks now rely on a large volume of user-generated material and activity records to give suggestions and more advanced services.

    The Social Core, a social network engine that incorporates semantic-based functionalities such as semantic annotations, semantic search, semantic-enhanced access control, and user privacy protection, is presented in this paper. The authors show how, using analysis techniques that take advantage of network specialisation, relationships in one network can be derived from interactions in another. A similarity measure on the concept network, for example, can be used to extract similarity in the ontology network. They also show how these tools can be used in the context of semantic peer-to-peer networks to generate consensus ontologies. The Social Core was included in the SmartCampus mobile platform, which was evaluated by over a hundred students, and is presently being developed as part of the European FP7 project SmartSociety.

11. **FilmTrust: Movie Recommendations from Semantic Web-based Social Networks** (J. Golbeck & J. Hendler. IEEE. 2006)

    FilmTrust, a Semantic Web-based website that merges social networks, movie evaluations, and recommender systems, was introduced in this study. Our research reveals that when a user's perspective differs from the norm, a movie rating recommendation based on trust values in a Semantic Web-based social network can provide much more accurate recommendations.

    This demonstrates how using freely available data on the Semantic Web can improve usability in some applications. Other applications where this type of analysis can be applied, such as email, are shown in some of their related work. The authors hope that this demonstration demonstrates the value of incorporating semantic web networks into applications and encourages further development of these techniques.

12. **Exploring Semantic Social Networks Using Virtual Reality** (Harry Halpin, et.al. Springer. 2008)

    Redgraph, the first generic virtual reality visualisation application for Semantic Web data, was presented by the authors in this research paper. As we illustrate with social network data from the US Patent and Trade Office, Redgraph can handle enormous data sets. To translate graph visualisation into the Semantic Web, they created a Semantic Web

vocabulary of virtual reality concepts that is compatible with GraphXML. Their method for visualising Semantic Web data relies on human engagement in an immersive environment to solve a variety of problems with 3-dimensional graph visualisation layout by allowing users to interactively extrude the nodes and links of a two-dimensional graph into the third dimension.

Users retrieve data formatted according to the data's schema or ontology when they touch nodes in the virtual reality environment. In order to examine networks of computing innovation, the authors used Redgraph to analyse social network data derived from patents, inventors, and institutions from the US Patent and Trademark Office. The results of a user research comparing extrusion (3-D) vs. no-extrusion (2-D) were presented using this data set. The study demonstrated that respondents who used a 3-D interface performed significantly better on fine-grained questions regarding the data set, but no significant difference was discovered for broad questions concerning the data's general structure. Furthermore, as illustrated with a data collection of biotechnology patents and researchers, inference can be utilised to improve visualisation.

13. **Combining Social Networks and Semantic Web Technologies for Personalizing Web Access** (Barbara Carminati, et.al. Springer. 2009)

Web metadata was created with the intention of protecting end users from potentially hazardous content while also making search and retrieval easier. They can, however, be used in more advanced applications, such as personalising Web access based on end-user choices. However, various concerns must be addressed in order to do this. One of the most important is how to evaluate the reliability of Web metadata.

The authors of this paper explore how collaborative and Semantic Web technologies can be used to address such a problem. The method they suggest is based on a web-based social network in which users can not only create labels, but also rate them. Labels and ratings are then used to determine the reliability of resource descriptions and enforce Web access customisation. The authors offer a WBSN environment that supports collaborative labelling and rating, in which members' labels/ratings are utilised to compute the trust value of resource descriptors and to enforce Web access customisation. Support for (a) trust policies, which allow WBSN members to specify who they consider trustworthy about specific topics and resource properties, and (b) user preferences, which allow WBSN members to specify which action the user agent should take on the requested resource when descriptors with specific characteristics and a specific trust value are detected.

A problem the authors want to address in order to improve the accuracy of trust calculation is how the specificity of a label should affect the trustworthiness of the enclosed descriptors. In this scenario, it is plausible to believe that the descriptors in lb3 and lb4 are more reliable than those in lb1 and lb2. It's worth noting that the specificity principle can also be used to user preferences in order to determine which action the user agent should

take on the requested resource. Their future work will include a thorough examination of these challenges.

14. **Semantic Analytics on Social Networks: Experiences in Addressing the Problem of Conflict of Interest Detection** (Boanerges Aleman-Meza, et.al. ACM. 2006)

    The authors described a Semantic Web application that finds COI links between potential reviewers and authors of scientific papers in this paper. In a filled ontology, this programme finds numerous "semantic linkages" between reviewers and writers to estimate the degree of conflict of interest. This ontology was built by combining entities and relationships from two social networks: "knows" from a FOAF (Friend-of-a-Friend) social network and "co-author" from the DBLP bibliography's underlying co-authorship network. The authors described their development of this application in the context of a class of Semantic Web apps that share significant research and engineering constraints. They also presented an assessment of our method for detecting COI in real-world situations.

    The authors discovered some big stumbling blocks in developing semantics-based applications as a result of this procedure. These can be divided into data-related challenges like metadata extraction, metadata quality, and data integration, as well as semantics-based algorithms and methodologies. As a result, approaches and tools for metadata extraction, quality assessment, and integration benchmarks will receive more attention in the future. They went into great depth on how these networks were linked together. They believe that utilising the implicit and explicit semantics of data, such as social networks, is the best way to maximise the value of Semantic Web applications. They explained what the Semantic Web offers today, what it takes to construct Semantic Web apps, and how things are expected to improve in the future based on their experiences developing this application.

15. **Analysis of a Real Online Social Network Using Semantic Web Frameworks** (Guillaume Erétéo, et.al. Springer. 2009)

    SNA uses graph algorithms to characterise the structure of social networks, key positions within these networks, specialised sub-networks, and people and activity decompositions. People can connect, communicate, and share their online activities across multiple social applications using online social platforms such as Facebook. When studying such social networks and dealing with the diversity of their relations and interactions, we enhanced SNA operators using semantic web frameworks to include the semantics of these graph-based representations. The authors report the findings of this method when it was applied to a genuine social network with 60,000 individuals connecting, conversing, and exchanging content.

The authors began researching several approaches to solving that challenge, including (1) discovering iterative, parallelizable, and other computation strategies. (2) determining which approximations can be employed and under what circumstances they produce high-quality outcomes (3) Identifying graph properties (small worlds, diameters, etc.) that can aid in the reduction of calculation space and time for various operators. Their goals include the creation of a semantic-based community discovery algorithm as well as strategies for managing the evolution of such dynamic networks. They intended to use these semantic-based SNA metrics to organise and nurture social connections in the midst of massive volumes of corporate social data.

16. **A State of the Art on Social Network Analysis and its Applications on a Semantic Web** (Guillaume Ereteo, et.al. HAL. 2008)

    Users are now considered ordinary online resources on the increasingly popular web 2.0 sites, which represent the largest social network ever evaluated. Some academics use traditional social network analysis methods to analyse such networks, while others develop models that take advantage of the semantics of their representation.

    The authors gave a state-of-the-art on SNA and demonstrated that, while this research subject has long been exploited, its application to the web has opened up new possibilities. The internet has become a major mode of communication in our culture, as well as a component of our socialisation. The vast amount of human interactions revealed by web 2.0 platforms reveals real social networks, and one of the difficulties of knowledge sciences is to understand their life cycles. These interactions have well-developed semantic models, and some of them are currently widely used in online social applications. The semantic use of social data in a machine-readable manner opens up new possibilities for SNA and improving online social experiences. They proposed a method for analysing social networks in a semantically aware manner.

17. **Semantic web-based social network access control** (Barbara Carminati, et.al. ELSEVIER. 2011)

    The existence of online social networks that include personal information opens up new possibilities for a variety of applications ranging from marketing to community organising. On the other hand, in order to create such apps, security and privacy considerations must be addressed. Improving social network access control systems looks to be the first step toward addressing online social network security and privacy concerns.

    To address some of the current shortcomings, the authors of this research offer a fine-grained online social network access control mechanism based on semantic web technologies that is expandable. They also offered authorisation, administration, and filtering policies based on OWL and SWRL models. This model's architecture has also

been presented, as well as the architecture of a framework to support it. They've also constructed a version of this framework and published experimental data for how long access control may be reviewed with this technique. More research may be done to determine a minimal set of access policies that could be employed in analysing access requests in order to improve the efficiency of these requests.

Furthermore, due to memory restrictions, the authors have demonstrated that existing social networks require some type of suitable data partitioning in order for semantic inference of their access control to be fair in terms of speed and memory requirements. Additionally, more research can be done to establish the optimal technique of representing a person's particular information in a social network, and whether a hybrid semantic/relational approach or a pure approach delivers the best overall system.

18. **How the Semantic Web is Being Used: An Analysis of FOAF Documents** (Li Ding, et.al. IEEE. 2005)

    The representation, creation, and usage of ontologies were initially the focus of Semantic Web researchers, who paid less attention to the social and structural links involved. The number of public RDF documents utilising the Friend of a Friend (FOAF) vocabulary has increased dramatically in the last year, providing a significant resource for researching how early Semantic Web adopters use the technology and establish social networks.

    The authors presented a method for locating, discovering, and analysing FOAF documents. Over 1.5 million FOAF documents have been gathered to demonstrate the diversity and scalability of the FOAF document network. They looked at how people in the FOAF community used namespaces and properties in practise, which helps the FOAF project standardise vocabularies. They also looked at the social networks created by the FOAF documents and discovered some interesting patterns that could be used to outsource and justify scientific knowledge.

    Researchers studying the (social) network structure in the Semantic Web may find the collection of FOAF documents to be a valuable resource. Analysis of FOAF documents and the discovery of patterns in related components require more investigation. The authors will broaden the definition of ties for network creation to include implicit relationships such as shared interests and experience. They will improve the FOAF network analysis approach in order to give a more effective and informative representation of the Semantic Web's structure. They also propose to study the structure of the FOAF network using a knowledge domain, which is projected to be a valuable tool for outsourcing and justification of scientific knowledge.

19. **Computing word-of-mouth trust relationships in social networks from Semantic Web and Web 2.0 data sources** (Tom Heath, et.al. ESWC. 2007)

Social media may be used as a source of new information as well as a filter to find the information that is most relevant to our requirements. The authors of this study proposed a methodology and algorithms for identifying who in one's social network understands what and who is the most reliable source of knowledge on a given topic by utilising existing Semantic Web and Web2.0 data sources. Incorporating topic-specific rather than worldwide trust measurements, their approach improves on earlier work in a number of ways. This is accomplished by using data from Revyu and del.icio.us to create topic experience profiles for each network member, indicating who knows what.

A rich trust model for information and recommendation seeking in social networks enables the identification of the most trustworthy sources. This method is built on algorithms developed based on earlier research for computing person-topic (expertise, experience) and person-person (affinity) trust metrics. Their approach addresses the constraints of earlier work in the subject by exploiting people's social networks and employing a rich model of trust in suggestion seeking. The authors are also developing a user-friendly application for searching and rating information sources within social networks by combining these parameters.

A number of outstanding concerns exist, which are the topic of current research, in addition to completing the deployment of the system mentioned above. To begin, we're looking into integrating new data sources. When paired with other Semantic Web datasets, the contents of users' FOAF files can provide a potentially rich source of information about users' experiences with specific topics. In terms of trust connection algorithms, we want to see how trust relationships change over time and how the rate of change varies between domains. Finally, they want to leverage tag co-occurrence patterns to disambiguate themes and propagate trust scores from one topic to others that are related.

20. **Towards a New Generation of Social Networks: Merging Social Web with Semantic Web** (Liana Razmerita, et.al. ELSEVIER. 2009)

The social web, often known as Web 2.0, has profoundly altered how people connect, communicate, and exchange information. Social networking sites (LinkedIn, Facebook) and social applications (YouTube, Flickr) facilitate on-line collaboration, interaction, and participation, where the social dimension, particularly the user community tightly integrated into the application domain, is critical to the application's success.

The primary technical difficulties that need to be solved in the future are semantics and social data portability, according to this study, which explores numerous well-known social network apps. The authors claim that these concerns can be addressed by creating social networks such as Semantic Web applications employing FOAF, SIOC, and Linked Data technologies, and demonstrate how this can be done using Java and core Semantic Web technologies in a prototype application. The prototype demonstrates how semantic

website elements like Freebase and DBpedia may be utilised in social apps, resulting in more relevant information and better social relationships.

In addition, the essay highlights a number of difficulties that must be addressed in the design and implementation of semantic social networks, which might be used as a model for additional semantic social applications. An AJAX-enabled application interface, a form-based interface for SPARQL, and dynamic, run-time object-ontology mapping tools are all fascinating approaches that could be explored further in the future.

References:

1. P. Mika, "Social Networks and the Semantic Web," *IEEE/WIC/ACM International Conference on Web Intelligence (WI'04)*, 2004, doi: 10.1109/wi.2004.10039.

2. P. Mika, "Flink: Semantic Web technology for the extraction and analysis of social networks," *Journal of Web Semantics*, vol. 3, no. 2–3, pp. 211–223, Oct. 2005, doi: 10.1016/j.websem.2005.05.006.

3. M. Opuszko and J. Ruhland, "Classification Analysis in Complex Online Social Networks Using Semantic Web Technologies," *2012 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining*, Aug. 2012, doi: 10.1109/asonam.2012.179.

4. J. Golbeck, "Combining Provenance with Trust in Social Networks for Semantic Web Content Filtering," *Provenance and Annotation of Data*, pp. 101–108, 2006, doi: 10.1007/11890850_12.

5. M. Lesani and S. Bagheri, "Applying and Inferring Fuzzy Trust in Semantic Web Social Networks," *Semantic Web and Beyond*, pp. 23–43, 2022, doi: 10.1007/978-0-387-34347-1_3.

6. Yutaka Matsuo, et.al "Spinning multiple social networks for semantic web | proceedings of the 21st national conference on Artificial intelligence - Volume 2," *Guide Proceedings*, 2022. https://dl.acm.org/doi/10.5555/1597348.1597408.

7. M. P. Cuéllar, M. Delgado, and M. C. Pegalajar, "Improving learning management through semantic web and social networks in e-learning environments," *Expert Systems with Applications*, vol. 38, no. 4, pp. 4181–4189, Apr. 2011, doi: 10.1016/j.eswa.2010.09.080.

8. J. Golbeck and J. Hendler, "Accuracy of Metrics for Inferring Trust and Reputation in Semantic Web-Based Social Networks," *Engineering Knowledge in the Age of the Semantic Web*, pp. 116–131, 2004, doi: 10.1007/978-3-540-30202-5_8.

9. Finin, T., Ding, L., Zhou, L. and Joshi, A. “Social networking on the semantic web | Emerald Insight,” *The Learning Organization*, vol. 12, no. 5, pp. 418–435, 2013, doi: 10.1108\/tlo.

10. J. J. Jung and J. Euzenat, “Towards Semantic Social Networks,” *Lecture Notes in Computer Science*, pp. 267–280, 2007, doi: 10.1007/978-3-540-72667-8_20.

11. J. Golbeck and J. Hendler, “FilmTrust: movie recommendations using trust in web-based social networks,” *CCNC 2006. 2006 3rd IEEE Consumer Communications and Networking Conference, 2006.*, 2022, doi: 10.1109/ccnc.2006.1593032.

12. H. Halpin, D. J. Zielinski, R. Brady, and G. Kelly, “Exploring Semantic Social Networks Using Virtual Reality,” *Lecture Notes in Computer Science*, pp. 599–614, 2008, doi: 10.1007/978-3-540-88564-1_38.

13. B. Carminati, E. Ferrari, and A. Perego, “Combining Social Networks and Semantic Web Technologies for Personalizing Web Access,” *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, pp. 126–144, 2009, doi: 10.1007/978-3-642-03354-4_11.

14. Boanerges Aleman-Meza, et.al. “Semantic analytics on social networks | Proceedings of the 15th international conference on World Wide Web,” *ACM Conferences*, 2006. https://dl.acm.org/doi/abs/10.1145/1135777.1135838.

15. G. Erétéo, M. Buffa, F. Gandon, and O. Corby, “Analysis of a Real Online Social Network Using Semantic Web Frameworks,” *Lecture Notes in Computer Science*, pp. 180–195, 2009, doi: 10.1007/978-3-642-04930-9_12.

16. Guillaume Ereteo, M. Buffa, Fabien Gandon, P. Grohan, Mylène Leitzelman, and P. Sander, “A State of the Art on Social Network Analysis and its Applications on a Semantic Web,” *Archives-ouvertes.fr*, 2008, doi: https://hal.archives-ouvertes.fr/hal-00562064.

17. B. Carminati, E. Ferrari, R. Heatherly, M. Kantarcioglu, and B. Thuraisingham, “Semantic web-based social network access control,” *Computers & Security*, vol. 30, no. 2–3, pp. 108–115, Mar. 2011, doi: 10.1016/j.cose.2010.08.003.

18. Li Ding, Lina Zhou, T. Finin, and A. Joshi, “How the Semantic Web is Being Used: An Analysis of FOAF Documents,” *Proceedings of the 38th Annual Hawaii International Conference on System Sciences*, 2005, doi: 10.1109/hicss.2005.299.

19. T. Heath, E. Motta, and M. Petre, “Computing word-of-mouth trust relationships in social networks from Semantic Web and Web 2.0 data sources - Open Research Online,” *Open.ac.uk*, 2007, doi: http://oro.open.ac.uk/23610/1/ComputingWorld-of-Mouth.pdf.

20. L. Razmerita, R. Firantas, and M. Jusevicius, “Towards a New Generation of Social Networks: Merging Social Web with Semantic Web,” *CBS Research Portal*, 2009. https://research.cbs.dk/en/publications/towards-a-new-generation-of-social-networks-merging-social-web-wi.