WAIN 2021 Notification of acceptance for paper 11

1 message

WAIN 2021 <wain2021@easychair.org> Fri, Oct 15, 2021 at 12:14 PM
To: Bruno Pereira dos Santos <bruno.ps@ufop.edu.br>

Dear Bruno Pereira dos Santos,

Congratulations - your paper 11 ‘Understanding mobility in networks: A node embedding approach' has been accepted for publication and presentation at the 3rd International Workshop on AI in Networks and Distributed Systems!

Reviews of your paper are appended to this email and are also available at https://easychair.org/. All papers received at least 3 reviews and decisions were made after a vigorous online discussion. Please pay attention to all the reviewers' comments/suggestions for improvement when preparing your final paper.

This email provides you with all the information you require to complete your paper and submit it for inclusion in the proceedings.

Camera-Ready Submission: Create your manuscript as specified in the template provided (https://www.performance2021.deib.polimi.it/wain/, https://www.performance2021.deib.polimi.it/call-for-papers/). The title, author names, affiliations etc. should strictly follow the format. Please don't use author titles (Dr. Prof. etc.) in front of names and also avoid using positions (Professor, Lecturer, Scholar etc.).

Proofread and check the layout of the paper. All papers submitted through the website are considered to be in final form and ready for publication. Do not submit your paper until you are ready. A good suggestion is to have a few colleagues review your paper to provide final remarks on its suitability before submitting it through the website.

Please submit the final file by using the Easy Chair portal at https://easychair.org/.

** Deadline for camera-ready papers: October 22, 2021 **

Registration: Each paper should have at least one Author registration in order for the paper to be published in the Proceedings. The registration fee for workshop authors is set to 60€ per paper. The presenter can be anyone of the authors. Accepted papers that will not be presented live at the conference will be withdrawn from the official proceedings.
Registration link: https://www.performance2021.deib.polimi.it/workshop-registration/
Further details: https://www.performance2021.deib.polimi.it/wain/

** Authors Registration deadline: October 22, 2021 **

Presentation: Each paper should have one author presenting the paper in order to be published in the proceedings. The paper presentation will be live and not pre-recorded. Presentation Instructions will be sent in the next few days.

Congratulations again for having your paper accepted in the 3rd International Workshop on AI in Networks and Distributed Systems!

Best regards,
Luca Vassio, Danilo Giordano, Jinoh Kim and Jon Crowcroft
WAIN 2021 Co-Chairs

SUBMISSION: 11
TITLE: Understanding mobility in networks: A node embedding approach

---------- REVIEW 1 ----------
SUBMISSION: 11
TITLE: Understanding mobility in networks: A node embedding approach
AUTHORS: Matheus Fellipe Do Carmo Barros, Carlos Henrique Gomes Ferreira, Bruno Pereira dos Santos,

Lourenço Alves Pereira Júnior, Marco Mellia and Jussara Marques Almeida

---------- Overall evaluation ----------
SCORE: 1 (weak accept)
----- TEXT:
This paper uses a “node embedding approach” to study the node mobility. The authors use a case study based on a trace of group meetings by Group Regularity Mobility Model (GRM) to demonstrate how their model can be used to characterize node mobility of a network. Other researchers also use node embedding approach for building solutions in mobile network; however, the authors of this paper seem to focus more on the approach/technique itself than its applications.

My biggest questions with this paper are the novelty and research contributions, especially compared to the traditional graph theory-based approach and to those other research which have used node embedding to study mobile network.

The authors contrast the node embedding approach vs. the traditional graph theory models in Section 1, including stating that the earlier graph theory-based approach does not consider the temporal dimension. Is this a fundamental limitation of the graph theory-based approach (or can it be added to add such characteristics) and, if so, why/how? Their methodology in Section 4.1 also constructs a graph to model the network, and I wonder if the node embedding approach builds on the earlier graph theory-based models, as opposed to being something entirely different. Clarifications about the fundamental differences between the traditional graph-theory approach vs. node embedding approach, including making precise and direction connections to the Methodology section for those contrasts (as opposed to leaving the contrast statements as just the high-level descriptions in the earlier sections), would help address these issues.

The authors do a good job in covering the related work literature, which includes a set of literature using node embedding for mobile network and helps motivating their research. However, it seems that these literature generally use similar approaches to apply the node embedding method for actual solution design in mobile network, which applications generally assume/conduct some mobility characterization and thus overlap with this paper’s contributions. For example, in Section 1, the authors state that their methodology “goes beyond capturing the topological aspects of the network, the mobility, and it factors the evolution of such patterns through a sequence of networks over time.” Do the previous research discussed in Section 1 and Section 2 not do this, and how does this high-level statement appear and materialize in the methodology in Section 4 (and is that technique novel compared to the previous research)?

On a more minor note, Section 4.2 has a typo “as suggested in ??”

Despite the aforementioned comments for improvement, I would recommend Weak Accept for this paper and recommend that the authors add and clarify to make their research contributions beyond the previous approaches/work more clear.

---------- REVIEW 2 ----------
SUBMISSION: 11
TITLE: Understanding mobility in networks: A node embedding approach
AUTHORS: Matheus Fellipe Do Carmo Barros, Carlos Henrique Gomes Ferreira, Bruno Pereira dos Santos, Lourenço Alves Pereira Júnior, Marco Mellia and Jussara Marques Almeida

---------- Overall evaluation ----------
SCORE: 1 (weak accept)
----- TEXT:
The paper proposes an embedding approach for mobility, taking into consideration node's spatial and temporal importance using the proposed Group Regularity Mobility. The proposed metric aims to consider the group temporal trends where a node's action belongs to.

The metric could be valuable in a number of scenarios, though it is still. mostly a topological metric which can be modelled as a temporal element too. Some works in this space have been done (e.g., see Richard Clegg's work on FETA) and related works on temporal graphs and GNNs, that can be utilized for further developing the proposed network. Nevertheless this is an interesting direction that deserves attention as it is also relevant to social media.

Section 5.2, CV is an interesting measure, what advantage does it have over betweenness or other centrality measures? The conclusion on "the more dynamic a node is, the lower its centrality " might depend on which centrality measure is used for example betweenness versus closeness?
In the case of comparison of metrics, we can't fully rely on Person’s correlation, rather one should use distance-based measures (KS distance, KL divergence etc)

Overall the paper provides interesting insights, but needs closer comparison with community/clustering metrics, and time-evolving topological frameworks. I look forward to seeing the improvements and more thorough studies in this

space.

4.2., broken ref: a sliding window (of size five as suggested in ??)

---------- REVIEW 3 ----------
SUBMISSION: 11
TITLE: Understanding mobility in networks: A node embedding approach
AUTHORS: Matheus Fellipe Do Carmo Barros, Carlos Henrique Gomes Ferreira, Bruno Pereira dos Santos, Lourenço Alves Pereira Júnior, Marco Mellia and Jussara Marques Almeida

---------- Overall evaluation ----------
SCORE: 0 (borderline paper)
----- TEXT:
Summary:

The paper proposes to leverage node embedding techniques to understand mobility patterns over both spatial and temporal dimensions.
Specifically, the paper uses a synthetic mobility trace based the Group Regularity Mobility Model (GRM) [18]; further, the paper leverages the authors' prior work called DynamicNode2Vec to extract mobility patterns.
The paper presents an analysis of the synthetic mobility trace via two analyses (cosine distance and vector norm) with the goal to understand the correlation between a node's mobility and a node's connectivity.

Comments/questions:

1. Sec 4.1: It is not entirely clear why the paper needs to build a network model first, given that it uses the GRM dataset already? Why is it not sufficient to directly use the mobility dataset and its existing graph structure? Additionally, what are the metrics of centrality used for?
2. Sec 5.2: what is the coefficient o variation analysis (i.e., Fig 3) for? It is not clear what the implication is with high coefficient between different days. What can one use such insights for? This is actually a recurring theme of this paper, where the main focus is on what the figures describe rather than what the observations imply—I suggest the authors to include more insights/lessons learned paragraphs.
3. Page 5: the analysis related to Table 2 might have different implications regarding correlation. The paper is interested in understanding the correlation at a node-level, but the correlation analysis seems to be at the graph level. Doing correlation analysis on averages sometimes can obscure important properties that would otherwise be useful to report.
4. "… we showed that our approach could reveal nodes with different mobility and connectivity importance levels, whereas the network topology evolves." It is not clear how entirely clear how the current analysis reveals both temporal and spatial dimensions as the paper claims. It would be good to elaborate in earlier sections.

Misc:

- page 3 "of size five as suggested in ??" missing citation?

- "Some of the possibles applications" -> "Some of the possible applications"