#46 (1570568892): *Periodicity Detection of Node Behaviour in Opportunistic Mobile Social Networks*

BibTeX

Property	Change Add	Value
Conference and *track*		**2019 IEEE International Conference on Internet of Things and Intelligence System (IoTaIS)** - *Connectivity for IoT*

	Name	ID	Edit	Flag	Affiliation (edit for paper)	Email	Country
Authors	Bambang Soelistijanto	731989			Sanata Dharma University, Indonesia	b.soelistijanto@usd.ac.id	Indonesia
	Elisabeth Permatasari	1704790	not creator		Iowa State University, USA	erma@iastate.edu	USA

Title	Only the chairs can edit	*Periodicity Detection of Node Behaviour in Opportunistic Mobile Social Networks*
Abstract	Only the chairs can edit	The recent rise of networks that rely on human mobility, such as opportunistic mobile social networks (OMSNs), has prompted the need for methods that detect the periodic patterns of node movements. Knowledge of the periodicity of node behaviour is essential to design effective and efficient network protocols in such networks. Node behaviour in OMSNs is typically characterized by the node contact patterns. In fact, node connections in these networks occur intermittently, resulting in sparse contact data. Consequently, the traditional periodicity detection methods, e.g. the FFT

periodogram and autocorrelation, that favour complete, regularly-sampled time-series data are unsuitable in this setting. In this paper, we exploit the Lomb-Scargle Periodogram, initially designed to handle incomplete or irregular sampling data, to identify node behaviour periodicity in OMSNs. Using simulation driven by real human contact traces, we show that the technique is able to accurately detect the behaviour periodicity of majority nodes in the network, even for those with a high level of sparsity contact data.

Keywords	Only the chairs can edit	periodicity detection; sparse contact data; the Lomb-Scargle Periodogram
Topics	Only the chairs can edit	D2d and M2M Communications; Sensor Network
Presenter(s)		Bambang Soelistijanto (bio)
Registration		Bambang Soelistijanto has registered and paid for Authors:By Comm
Session		*PS 1* from Tue, November 5, 2019 13:00 WITA until 15:30 (5th paper) in Ballroom B (20 min.)
DOI	Only the chairs can edit	
Status		Accepted
Notes		
Copyright form		IEEE; IEEE: Sep 16, 2019 00:09 America/New_York
Presentation	Could upload until Nov 3, 2019 21:59 America/New_York.	However, authors cannot upload: presentation deadline
		However, authors cannot upload: final deadline
Final manuscript	Could upload until Oct 12, 2019 23:59 America/New_York.	

Document (show)	Pages	File size	Changed
PDF	5	988,776	Sep 16, 2019 00:13 America/New_York

Stamped for	However, authors cannot upload:

attendee proceedings	Document (show)	Pages	File size	Changed
	PDF	5 (25...29)	1,026,591	Dec 5, 2019 13:02 America/New_York

Stamped for IEEE Xplore	Document (show)	Pages	File size	Changed
	PDF	5 (25...29)	1,026,588	Dec 5, 2019 13:02 America/New_York

Personal notes

You are the creator and an author for this paper. You have authored an accepted paper.

Reviews

4 Reviews

Review 1

The Research Novelty	The Clarity of Research Question	Research Methods	Scientific argument and discussion	Future Impact
Significant original work and novel results. (4)	Problem can be identified, and related to literature review (4)	Research method is not easily identified, but only partially appropriate to address the problem (4)	Good discussion with adequate evidence to support conclusion (4)	Future impact is defined but not very clear; the likely impact is relevant to some research/society (4)

Detailed comments (Please justify your recommendation and suggest improvements in technical content or presentation.)

The paper present the Lomb-Scargle Periodogram, initially designed to handle incomplete or irregular sampling data, to identify node behaviour periodicity in OMSNs.

Review 2

The Research Novelty	The Clarity of Research Question	Research Methods	Scientific argument and discussion	Future Impact
Minor variations on a well investigated subject. (2)	Problem is incompletely reported, and the relevance to literature review is not clear (3)	Research method is not clearly identified, but inappropriateness is not evident (3)	Standard arguments that only partially support the conclusion (3)	Future impact cannot be identified. (1)

Detailed comments (Please justify your recommendation and suggest improvements in technical content or presentation.)

The paper deals with OMSNs, an interesting and fashionable topic nowadays. It can have many applications, in particular in social science, but also for getting information for network researchers for designing more suited communication and interaction protocols.

The work is performed on an experimental basis, leveraging two public datasets (unfortunately quite ancient). The paper aims at identifying periodicity in the behavior of humans in meeting each other. The paper contribution deals in using the Lomb-Scargle periodogram for that purpose. But authors fail motivating the use of this periodogram. What does it provide compared to other existing approaches? What lack is it able to correct compared to other solutions?
The presentation of trace preprocessing is not clearly described. The use of the ONE simulator in actual traces is confusing. It worth detailing what ONE is and for what purpose it is used with the traces. Then, it would be important to clarify how a contact between to human nodes is identified?
The evaluation part does not validate the results. There is already a significant literature that present results on the analysis of the two public datasets used in this paper. It would then be interesting and important to consider one (or a mix of all the) result(s) existing in the literature and to use it as a groundtruth for estimating the accuracy of the proposed method based on Lomb-Scargle periodogram.

The paper also needs a proof reading to improve the quality of the written English.

Review 3

The Research Novelty	The Clarity of Research Question	Research Methods	Scientific argument and discussion	Future Impact
Some interesting ideas and results on a subject well investigated. (3)	Problem is incompletely reported, and the relevance to literature review is not clear (3)	Research method is not easily identified, but only partially appropriate to address the problem (4)	Conclusions are not supported by decent discussion (2)	Future impact is not explicitly defined; the likely impact is limited (3)

Detailed comments (Please justify your recommendation and suggest improvements in technical content or presentation.)

This paper employed Lomb-Scargle periodogram to discussed the periodicity of non-uniform sampling data series drawn from social networks, which partily supported the conclusion, but it did not clearly analyse when it is workable and when it is not workable. Only using some real data and the well known social phenomenon can not make such a conclusion very well. It needs much work to do.

Review 4

The Research Novelty	The Clarity of Research Question	Research Methods	Scientific argument and discussion	Future Impact

Minor variations on a well investigated subject. (2)	Problem is incompletely reported, and the relevance to literature review is not clear (3)	Research method is not easily identified, but only partially appropriate to address the problem (4)	Standard arguments that only partially support the conclusion (3)	Future impact is not explicitly defined; the likely impact is limited (3)

Detailed comments (Please justify your recommendation and suggest improvements in technical content or presentation.)

1- The discussion is not clear enough.
2- Redraw the figures.

Congratulations! 2019 IEEE International Conference on Internet of Things and Intelligence System (IoTaIS) - #47347 is now published in IEEE Xplore

EDAS Conference Manager <help@edas.info>
on behalf of
info@iotais.org <info=iotais.org@edas.info>
Fri 2/7/2020 3:33 PM

To: Soelistijanto B <b.soelistijanto@usd.ac.id>

Dear Authors,

Congratulations!

Following good news from IEEE Meetings, Conferences & Events (MCE) :

"2019 IEEE International Conference on Internet of Things and Intelligence System (IoTaIS) has been posted to the IEEE Xplore digital library effective 2020-02-06.
Along with publication in IEEE Xplore, IEEE assures wide distribution of conference proceedings by providing abstracting and indexing information of all individual conference papers to worldwide databases. IEEE makes every reasonable attempt to ensure that abstracts and index entries of content accepted into the program are included in databases provided by independent abstracting and indexing services. Each abstracting and indexing partner makes its own editorial decision on what content to include. IEEE cannot guarantee entries are included in any particular database."

Looking forward to see you in IoTaIS'2020

Best Regards
Muhammad Ary Murti