

**Fw: Transportmetrica A: Transport Science - Decision on Manuscript ID TTRA-2018-0169**

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From: Transportmetrica A: Transport Science <onbehalf@manuscriptcentral.com>

Sent: Wednesday, November 14, 2018 17:07

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Subject: Transportmetrica A: Transport Science - Decision on Manuscript ID TTRA-2018-0169

14-Nov-2018

Dear Dr Zhang:

Your manuscript entitled "Short-term Traffic Flow Prediction Based on Spatio-temporal Analysis and CNN Deep Learning" which you submitted to Transportmetrica A: Transport Science, has been reviewed. The reviewer comments are included at the bottom of this letter.

The reviewer(s) would like to see some major revisions made to your manuscript before publication. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript. Your revised manuscript will be sent back to the reviewer(s) for comments.

To submit the revision, log into <https://mc.manuscriptcentral.com/ttra> and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision. Please enter your responses to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you made to the original manuscript. Please be as specific as possible in your response to the reviewer(s).

Alternatively, once you have revised your paper, it can be resubmitted to Transportmetrica A: Transport Science by way of the following link:

\*\*\* PLEASE NOTE: This is a two-step process. After clicking on the link, you will be directed to a webpage to confirm. \*\*\*

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IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to Transportmetrica A: Transport Science, your revised manuscript should be uploaded as soon as possible. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to Transportmetrica A: Transport Science and I look forward to receiving your revision.

With best regards.

S.C. Wong

Editor-in-Chief, Transportmetrica A: Transport Science

## Reviewer(s)' Comments to Author:

Reviewer: 1

### Comments to the Author

#### 1. Results: Recommend to be Revise and Resubmit

This paper proposes a short-term traffic flow prediction model based on a convolution neural network (CNN) deep learning framework. The forecasting results indicate that the proposed method outperforms existing models based on support vector regression and artificial neural networks in terms of accuracy and stability.

However, this paper does not provide very convinced literature review to indicate the background why the CNN model is suitable to forecast the traffic flow, is only that the CNN right now a popular tools? Please provide more convinced relevant literature review to support the very reason why CNN is suitable to be employed to traffic flow forecast. Section 2.1 should move to the relevant literature review section, due to it divides the traffic flow conditions have temporal and spatial characteristics. In addition, in page 6, please provide more statements for the contributions of this paper, at least 150 words for each contribution point.

By the way, for the citation problem, line 31 on page 3, Yang and Zhu (1999) is lost in the reference list, please check it carefully. For the reference list problems, (1) please avoid citing working papers, such as Ermagun and Levinson (2016); (2) please also avoid citing meeting conclusion, such as Zhang et al. (2016); (3) please provide complete citation information, such as Kingma and Ba (2014), Wu et al. (2015), and Wu and Tan (2016); (4) please provide relevant DOI for those papers in press status, such as Xu et al. (2018) and Zhang et al. (2018).

Secondly, authors should provide the very details illustrating how the proposed model is working in the experimental results section, i.e., lacking of some essential brief explanation vis-à-vis the text to indicate how the proposed methodology (Figure 1 in page 10) is working in the experimental results section. In addition, for Figure 3 in page 14, please also provide some necessary wordings to guide readers to understand what authors have done and obtained from Figure 3. For Eq. (11) in page 18, please explain why this equation should be involved to be as the loss function; similarly, for Eq. (12) in page 19.

Algorithm 1 in pages 26 and 27 is not introduced in text, please provide some necessary illustrations for Algorithm 1.

Finally, for Table 5 in page 31, authors should try to conduct some statistical test to verify the significance of the forecasting performance from the proposed approach. Without the significant test, this paper only has minor contribution. Please refer Diebold and Mariano (1995) and Derrac et al. (2011).

F. X. Diebold and R. S. Mariano, "Comparing predictive accuracy," Journal of Business & Economic Statistics, vol. 13, No. 3, pp. 134-144, 1995.

Derrac, J.; García, S.; Molina, D.; Herrera, F. A practical tutorial on the use of nonparametric statistical tests as a methodology for comparing evolutionary and swarm intelligence algorithms. Swarm Evolutionary Computation 2011, 1, 3-18.

Reviewer: 2

### Comments to the Author

Short term traffic forecasting has been a hot topic in transportation field, and it would be useful for investigating the spatial-temporal information in traffic data for traffic prediction. Following are some comments.

First, the paper is unnecessarily lengthy, and the authors should consolidate the presentations greatly for concisely demonstrating the studies.

Second, the proposed methods and the comparative methods should be given in separate sections for clear presentation.

Third, computational efficiency is important for online traffic prediction, and this should be investigated in this paper.

Finally, seasonal time series model and k-nearest neighbor model are two conventional short term traffic prediction models, and should be selected in this paper as comparative methods.

Reviewer: 3

Comments to the Author

Please see my detailed comments in the attached file. (Reviewer3-TTRA-2018-0169.pdf)

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普通附件

Reviewer3-TTRA-2018-0169.pdf (500.06K)