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IEEE Transactions on Cybernetics <onbehalf@manuscriptcentral.com>

Wed 11/03/2020 9:37 PM

To: Zhen Wang <zwan4121@uni.sydney.edu.au>

Cc: sergio@us.es <sergio@us.es>

Dear Mr. Wang:

The manuscript: Locally Consistent Non-negative Matrix Factorization Model Based on Dark Knowledge for scRNA-seq Data Clustering CYB-E-2020-02-0240 has been submitted to the IEEE Transactions on Cybernetics. I would greatly appreciate your taking your time to review this manuscript. The abstract is attached below.

We would appreciate if you could review the paper within 8 weeks. If you are unable to meet this schedule, please advise me via e-mail of an approximate date that you can review the manuscript. I know you are very busy and it represents an imposition on your time to perform this service. Our primary objective is to obtain a high quality, fair review of the manuscript. Please let me know whether you can do the review by e-mail within two business days. You may use the links below to record your response:

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An account has been created and you may have previously received your userid and password. If you have not received it, your Manuscript Central (<https://mc.manuscriptcentral.com/cyb-ieee>) userid is zwan4121@uni.sydney.edu.au. If you need your password, enter your user-id and (leaving the password blank) and click the button to log-in. A page will come up that asks you if you need your password sent to you. Clicking the request button will generate an automatic e-mail that contains your password.

Sincerely,

TITLE:

Locally Consistent Non-negative Matrix Factorization Model Based on Dark Knowledge for scRNA-seq Data Clustering

ABSTRACT:

The rapid development of single-cell RNA sequencing (scRNA-seq) technology has revealed a series of complex growth processes, such as cell proliferation, differentiation, and cell mutation. With the gene expression of high-dimensional data, identifying cell subtypes becomes a difficult task. To solve the clustering task of high-dimensional data, we propose a method called locally consistent non-negative matrix factorization model based on dark knowledge for scRNA-seq data clustering (LDNMF). The LDNMF model is based on dark knowledge and embeds the manifold structure into the non-negative matrix factorization (NMF) model. From the geometric perspective, data is usually sampled from low-dimensional manifolds embedded in high-dimensional environmental space. Dark knowledge of data is used as the criterion of data similarity measurement. We encode the local consistent structures of similar data and calculate their Gaussian kernel weights. In experiments, the performance of the LDNMF model is verified on ten scRNA-seq datasets. Compared with other nine advanced single-cell clustering methods, whether it is a comprehensive analysis or an individual analysis of the dataset, LDNMF has achieved encouraging results. Furthermore, we prove the convergence of the LDNMF model and analyze its time complexity.

Thank you for submitting your review of Manuscript ID CYB-E-2020-02-0240 for the IEEE Transactions on Cybernetics

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Sat 14/03/2020 6:36 PM

To: Zhen Wang <zwan4121@uni.sydney.edu.au>; zohnwang.thu@gmail.com <zohnwang.thu@gmail.com>

Cc: sergio@us.es <sergio@us.es>

14-Mar-2020

Dear Mr. Wang:

Thank you for reviewing manuscript # CYB-E-2020-02-0240 entitled "Locally Consistent Non-negative Matrix Factorization Model Based on Dark Knowledge for scRNA-seq Data Clustering" for the IEEE Transactions on Cybernetics.

On behalf of the Editors of the IEEE Transactions on Cybernetics, we appreciate the voluntary contribution that each reviewer gives to the Journal. We thank you for your participation in the online review process and hope that we may call upon you again to review future manuscripts.

Sincerely,
Prof. Sergio Cruces
Associate Editor, IEEE Transactions on Cybernetics
sergio@us.es