>Reviewer #1: In this paper, the authors design an approach that uses data-driven techniques to build a performance model for CDN cache server groups. They use deep LSTM auto-encoder to capture the temporal structures from the high-dimensional monitoring data, and use a deep neural network to predict the reach rate, which is a client QoS measurement from the CDN service provider's perspective. They have carried out a series of practical experiments to prove the efficiency of the designed system. Overall, I think that the manuscript is well organized and show some interesting results. However, I still have some concerns with the manuscript as it is presented which are detailed below, this paper should have been carefully revised before being accepted by the JPDC.

>

**>(1) The paper has quite a few language or presentation issues which need to be corrected carefully. The English writing should be improved with a native speaker help, there are many long sentences, which distupt the understanding of readers.**

(INTRODUCTION, p1)

CDN helps content provider deliver web pages and other multi-media content to the clients

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CDN helps content provider deliver web pages and other multimedia content to the clients

(INTRODUCTION, p1)

>(2) In part3, this paper describe the problem formulation and related models. The authors define that performance evaluation as a sequence learning problem and then they compare the linear models and non-linear models. So, this part name should be Problem Formulation and Models Comparison. The authors should further clarify why they select LSTM to solve the sequence learning problem through these models comparison. Could the author give a table to compare the strengths and weaknesses of these models? This table should contain some specific comparison items. Based on these comparisons, the author can give a conclusion for why choosing LSTM.

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>(3) Figure 6: three steps of feature enginnering should be Figure 6: three steps of feature engineering, there are many word errors, at the same time, the author needs to explain Figure 6's meaning clearer. The author should describe more clearly how to choose the key features.

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>(4) The author should more clearly clarify the logical relationship between current study and the previous works.

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>Reviewer #2: In this paper, the authors define the CDN Cache Server Groups performance evaluation problem as a sequence learning problem. And they use representation learning by LSTM auto-encoder to extract useful features from the real CDN operation log data. After that, they compare their methods with state-of-arts methods and show the proposed method is superior by empirical studies. This paper work is based on real CDN operation log data and has practical significance value in CDN operator. Their experiments have proved the designed method effectiveness to optimize CDN scheduling policy. But this paper should have some main revision before acceptance:

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>1. Writing problems: The sentences and structures of the paper need to be further polished. Some expression of this paper is like the output of the Google translator.

>

>2. Recently, data driven methods have been verified to solve some resource scheduling problems in networked system. This paper design a data-driven technique to build a performance evaluation model for CDN cache server groups. Because the data comes from the actual CDN operator, the author should give more descriptions of the data format and types in detail.

>

>3. The author should explain why they select LSTM to solve the defined performance evaluation problem? Where are its representative and reasonableness, compared with other models? The author should explain more consideration points.

>

>4. For Figure 7: Correlation Matrix of the feature set, In the case of black and white printing, it is difficult to see the meaning of its expression, whether it can have other expressions, or add more tips icon on it?

>

>5. In the recent years, we have witnessed a developing trend of data-driven methods to solve the prediction and scheduling problems. The authors should consider LSTM have their own applicability and feasibility in different scenarios. It means that

>if the scenario has changed, is there any other improvements or variants of LSTM, which should be discussed in future work.

>

>6. For selecting log data, whether any other CDN log data can also be used for performance evaluation or scheduling policy optimization? Please give some explanation.

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>Reviewer #3: In this paper, they present a data-driven approach to evaluate the performance of cache server groups in CDN system. The lstm auto-encoder can capture the long-term temporal information in the sequences. This paper shows that it is feasible to apply state-of-the-art deep learning techniques to model networked systems that provides estimation for its performance. The empirical studies shows that their scheme has outperformed the conventional methods. In the last few years, we have witnessed an increasing trend of data-driven paradigm. Data driven methods have been used to solve classical problems in many different fields in recent years. This paper work is meaningful and the structure is reasonable. And the experiment proved the effectiveness of their LSTM-based performance evaluation scheme. But they still need to improve this paper in the following aspects:

>(1) The English writing should be refined, there are a lot of definite articles and indefinite articles problems.

>(2) In part 4.1. Feature engineering, the authors should elaborate on how to choose the key features among many features, what is the main method, and what is the advantage of this method?

>(3) Algorithm 1 should have a clearer implementation of the execution steps description, which is not very clear now. Did the author design other algorithms? If you have, you need to describe it.

>(4) The implementation of experiments based on real CDN operation data is good for data-driven methods. However, the author needs to describe the format, meaning of these data, what type of data is combined for quality assessment.

>(5) The experiment results, such as Figure12, need more explanation and analysis, for example, this figure can be divided into a, b, c, d four parts, and should be analyzed respectively.