PROJECT REPORT

BUS ROUTE DEMAND PREDICTION WITH DEEP LEARNING

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2022

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ACKNOWLEDGMENT

Praise and gratitude the author prays to the presence of God Almighty for all the grace given so that the preparation of this thesis can be completed with great results. The title of the thesis that the author proposes is "BUS ROUTE DEMAND PREDICTION WITH DEEP LEARNING".

The thesis was submitted to fulfill graduation requirements at the Faculty of Computer Science, Informatics Engineering Study Program at Soegijapranata Catholic University. Many things that the author went through while writing this thesis, ranging from hard work to patience in understanding the aspects needed to complete the thesis so that it was of higher quality. The author understands that many persons have contributed to the completion of the study and the final project. Therefore, with great gratitude, on this moment the author would like to thank:

1 Parents and family who have give full support during lectures.

2 Mr. Yonathan as a my supervisor that realy helps me for this thesis to be done.

3 All Unika IT Lecturers.

4 Close friends who help self-development.

5 Unika has become a place for me to be ready in the world of work.

The author realizes that this thesis is far from perfect, even though the author tries to give the best of what the author can do. Finally, the writer expects criticism and suggestions for the achievement of good things from this thesis. The writer hopes that this thesis can be useful for readers, especially for other writers that .

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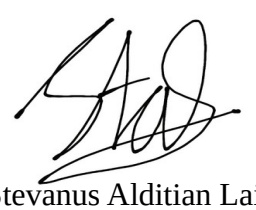

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ABSTRACT

bus companies currently have several obstacles in providing their fleets from one city to another because of the highly dynamic demand from passengers, bus companies must be able to analyze which routes will have a lot of demand so that bus companies can provide more fleets on the routes that will have high demand. Unfortunately the bus company is currently still unable to predict which routes will be in high demand, at this time the bus company can only guess. Currently, to overcome this, the bus company has collected data which will later be analyzed.

Since the deep learing method is relatively new for bus company to predict the bus route demand, this study explores new method to make the bus company more profitable by trying to create and implement LSTM Autoencoder-Bi-LSTM Hybrid Models and Bi-LSTM to forcast bus route demand to support the decision making process in orrder to optimize bus fleet deployment each route.

The results shows that LSTM Autoencoder-Bi-LSTM Hybrid Models and Bi-LSTM models doesn't differ very much, the loss and metrcs value differ a little, and both models performs quiet well, but 1 things that differ these 2 models, that is the training time, the autoencoders training time is very slow compared to models without autoencoders. This is normal for autoencoder to train slower than without it due to more network depth of the models with autoencoder.

Keyword: Autoencoders, deep learning, LSTM, Bi-LSTM

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