

**DEVELOPMENT OF A QUEUING SIMULATION
MODEL FOR TRAIN PASSENGERS**

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Master of Engineering Degree

Department of Mechanical Engineering

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Sri Lanka

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Thesis/Dissertation submitted in partial fulfilment of the requirements for the degree
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DECLARATION

This report contains no material which has been accepted for the award of any other degree or diploma in any University or equivalent institution in Sri Lanka or abroad, and that to the best of my knowledge and belief, contains no material previously published or written by any other person, except where due reference is made in the text of this report.

I carried out the work described in this report under the supervision of Dr. Himan Punchihewa.

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Abstract

Sri Lanka Railway (SLR) is currently having a schedule with uneven time intervals between trains. It reduces the popularity of the railway system and as a result new passengers hesitate to join the system. Hence, this current system is generally used by regular travellers only. In order to seek ways to improve the train schedules simulation based approaches have not been used in Sri Lanka. Therefore, the aim of the research was to develop a simulation model to minimise queuing time of passengers while maintaining an even interval between trains.

A passenger survey and a railway survey were carried out to find current issues related to the timetable and the service. Considering the feedback of passengers, a simulation model was created using the Anylogic simulation software for the current train scheduling and the proposed train scheduling systems.

The simulation model shows that passenger queuing time is able to be changed using the parameters of the model. Results also indicate that queuing can be potentially reduced using even time intervals between trains. However there could be a necessity to change the number of compartments to cater for the number of commuters in the proposed system. In addition the proposed system needs to be piloted in order to understand and overcome the practical limitations. This could potentially help to improve the popularity of the railway system in Sri Lanka. The operation model was developed between two stations due to limitation of the software. Thus, it is proposed to develop the model to cover the entire train fleet and the network to obtain more accurate and repetitive results.

Keywords: train schedule, Anylogic, modelling, queuing time

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