Abstract

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Master in Computer Science

Predicting Queueing Times Using Queuing Theory & Predictive Analytics

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Queueing theory has its origin in research by Agner Krarup Erlang, with his design of models that describe the telephone exchange in Copenhagen, Denmark. Since its inception, queueing theory has been incorporated into telecommunications networks, traffic engineering, and even in the design of retail locations and factories.

In the past few years, predictive analytics as a field has been gaining traction in both research and commercial environments. Predictive analytics involves analysing historical and current data and then feeding that data into a predictive model. The model then runs one or more algorithms, producing a prediction about future or unknown events.

This dissertation aims to utilise a combination of both fields in an attempt to answer the following research question: *"How accurate can a system using a combination of queueing theory and predictive analytics be in creating predictions of queueing times in dynamic, single, real-time queues such as walk-in food takeaway establishments?"*