Propositions

attached to the thesis

Optimizing the Performance of Robotic Mobile Fulfillment Systems

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I

The throughput capacity of a Robotic Mobile Fulfillment System can be scaled up and down in a short amount of time, and therefore it is suitable for small companies that experience high but unpredictable growth in their warehousing operations.

(This thesis)

II

The optimal placement of workstations around the storage area depends on how the storage area is divided into product storage zones.

(Chapter 2)

III

A multi-class, semi-open queueing network, where an order of a certain job class can be matched with a pod of the same or of a higher class, can be unstable if the arrival rate of one class is lower than that of a higher class, even if the total arrival rate is lower than the throughput capacity of the network.

(Chapter 3)

IV

A pick order to workstation assignment decision rule that uses the available information about the pods coming to the workstations significantly outperforms other decision rules that do not take this information into account, because it can reduce the number of pods that need to be brought to the workstation.

(Chapter 4)

V

A demand-dependent resource allocation policy is a policy that specifies the resource allocations to be used during periods of low demand and high demand. Suppose that a fixed resource allocation of robots and workstations to the picking process and to the replenishment process exists for which the system is stable. It then follows that a demand-dependent policy must exist for which the system is stable.

(Chapter 5)

VI

Neural networks cannot learn to succesfully translate a sentence containing an idiom. The parts that comprise the idiom will occur much more frequently in the training data than the idiom itself, which makes a literal translation more likely.

VII

If the credibility of the main character in a videogame is compromised, the player experiences this as a breach of trust, since in a videogame the main character functions as a projection of the player in the game world. The more a player identifies with a main character, the stronger the sense of broken trust will be.

VIII

For a movie that is based on a book, it is a challenge to present the inner struggles of the main character to the audience in the cinema.

The more difficult this challenge is, the more likely it becomes that the movie director replaces the inner struggle of the main character in the book with a conflict between the main character and a close friend in the movie.

IX

British pubs allow dogs whereas Dutch ones do not, because a dog makes the British feel more comfortable in a social setting, which is not true for the Dutch.

X

Game theoretic models can model negotiations between unskilled negotiators but not between skilled negotiators, because skilled negotiators have the ability to shape the negotiations, i.e., change how outcomes are perceived by the other party, raise new factors, concerns and solution possibilities that were not foreseen beforehand.

XI

Life is like a rollercoaster: it involves a lot of queueing.