

Purchasing strategy and pricing of LEGO products

Internship or final project (MSc AM)

1 Context

If a LEGO fan wants to acquire large quantities of LEGO elements or needs rare/missing elements there are multiple online marketplaces to find them. On these platforms many hobby and commercial sellers have stores in which they sell elements, minifigs and LEGO sets. The challenge with acquiring elements and sets for most stores it is impossible to get a license from LEGO because of the store size. Furthermore, LEGO only sells sets and no specific parts in wholesale. Therefore, sellers are forced to buy sets and part them out into individual pieces and sell them.

2 Unbrickable

Unbrickable is a local company located in Enschede, 5 minutes from the University of Twente. We buy LEGO sets and sell the parts and realize custom LEGO sets. Unbrickable is part of the Brickworkz foundation, founded to provide youth with a challenge, like autism or ADHD, with a side job, in order to develop working and social skills.

3 The problem

There is a need to develop a purchasing strategy (which sets to buy) as well as a pricing strategy for the individual pieces. A project could focus on one of these problems.

Preliminary work has shown that a purchasing strategy can be formulated as a mixed-integer program. Due to the size of these models, however, they cannot be solved using standard solvers. Therefore, more sophisticated models or a dedicated solver are required.

The pricing strategy can be based on historical data that is available from various marketplaces as well as the current market situation. The idea is to formulate a Markov decision process that results in the optimal price. Again, the amount of data and number of LEGO items form an important bottleneck in coming to computationally efficient solutions, so suitable approximation techniques will have to be developed.

4 Contact

In consultation, multiple assignments and directions are possible, just reach out to discuss the possibilities.

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