Reinforcement learning for optimal inventory rationing (*New - Winter 2019*)
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A Toronto-based food manufacturer has experienced fluctuating market demand. When the demand exceeds the available inventory, the company will have to fulfill demand only partially, resulting in penalty according to contract with major clients. Therefore, the manufacturer wants to optimize the allocation of insufficient inventory considering terms and conditions in contracts with major clients. The objective of such inventory rationing problem is to minimize the long-term consequences. This project is to develop Monte Carlo simulation-based dynamic optimization algorithm to recommend how to allocate insufficient inventory. The student will have to analyze business contracts, develop a Monte Carlo simulation system, design an optimization algorithm on top of the simulation model, and produce solutions for the manufacturer. The student needs to have good understanding on Markov decision process, Monte Carlo simulation, and reinforcement learning.
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