

Machine learning for time slot management in e-grocery

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In attended grocery home delivery, it is common to let customers choose a delivery time slot to receive their groceries. To effectively manage the time slot offering, the e-grocer must evaluate the available capacity for each time slot as customer orders come in. This corresponds to finding a feasible solution to the Vehicle Routing Problem with Time Windows (VRPTW) for each new customer and time slot. This is challenging in practice as there is little time available as e-grocers strive for almost instant response times. Instead of checking this feasibility using routing methods, it is possible to use Machine Learning (ML) to predict the feasibility of offering a time slot in this context. Our results on realistic instances using a commercial route solver suggest that machine learning can be a promising way to assess the feasibility of customer insertions.