International Post Corporation

Posti's smart Parcel Lockers predict the filling rate of lockers

08-11-2021

In November, Posti will start using a dynamic parcel routing system throughout Finland. In the future, artificial intelligence and machine learning will predict changes to the filling rate of Posti Parcel Lockers. The artificial intelligence added to the parcel lockers can already predict with an accuracy of 96% which parcels will be picked up from the parcel locker within 24 hours. With a prediction model capable of learning, parcels can be delivered without unnecessary driving and to a location near the consumer.

The filling of parcel lockers is limited by both the number and size of individual lockers: while small parcels can be put in lockers of various sizes, larger parcels will only fit into some of the lockers. Hundreds of parcel lockers become completely full every day or at least on several days a week.

"Popular parcel lockers cannot be expanded if they are located in a limited space, such as inside a store. With artificial intelligence and machine learning, we are able to get a more accurate forecast of parcel locker capacity, which helps us route parcels to the parcel lockers chosen by recipients more often. In addition, more parcels can be made to fit into certain parcel lockers," says Jari Paasikivi, Posti's Project Manager responsible for the parcel routing system.

The parcel routing system anticipates the development of the available capacity in the parcel locker with artificial intelligence, predicting how many of the parcels in the parcel locker will be picked up before the driver brings the next load of parcels. The filling rate forecast for parcel lockers used to be based on a fixed average that did not take into account variation according to the parcel locker, day or season.

The accuracy of forecasts made by artificial intelligence is nearly 100%

Thanks to more accurate capacity forecasts, the process becomes faster and parcels can be delivered to recipients as quickly as possible. The artificial intelligence can already predict with an accuracy of 96% which parcels will be picked up from the parcel locker during the first 24-hour period.

"The parcel can be delivered to a location as near to the customer as possible, which reduces unnecessary driving and the emissions from it. We already know with an accuracy of nearly 100% which of the parcel locker's individual lockers will be emptied and are able to reserve the correct number of items for the next day," Paasikivi says.

We are already working on the next development project related to the use of artificial intelligence in parcel routing. Before the parcel arrives at Posti, the online store sends an advance message about it. The sending time of the message varies by online store. Artificial intelligence is used to predict when the parcel will actually arrive in sorting. If the arrival time can be accurately predicted, advance bookings can be made for parcel lockers and the wishes of customers can be taken into account to an even greater degree.

"We have been building our ability to use data for a wide range of purposes with a long-term view. Having artificial intelligence as part of

our parcel locker network is an excellent example of how data and technology can be used to improve the customer experience. We have particularly invested in our machine learning competence, and the artificial intelligence that routes parcels has been developed fully by our own staff," says Riku Tapper, who is responsible for Posti's data and automation.

Source: Posti