Small parcel routing in a crowdsourced physical internet

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Abstract

We envision a new logistic process for delivering parcels by crowdsourcing curriers. It is based on a network of automatic service points, which are used as a drop-off, pickup, and intermediate transfer points. The system offers the occasional curriers monetary rewards for stopping by the service points and for transferring parcels between them during their regular trips. In this talk, we will present an online routing algorithm that matches parcels to occasional curriers. Parcels can be transferred to their destination in several legs by several different occasional curriers, hence the term physical internet. The economic viability of the proposed method is demonstrated via a simulation study that is based on realistic data about car journeys and small parcel shipments. The ratio between the rewards paid to the occasional curriers and our conservative estimate of the time needed to handle the parcels is well above the average hourly wage while the average cost of delivering a parcel is significantly lower than the price of parcel delivery service in the same market.

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