



ID de Contribution: 1

Type: Non spécifié

## Algorithm for the packaging return logistics at Renault: a Julia code in production

*vendredi 6 octobre 2023 14:00 (30 minutes)*

This talk highlights the fruit of a partnership with Renault. Their return logistic requires solving a continent-scale multi-attribute inventory routing problem (IRP). It corresponds to the following situation: a supplier manages the delivery of several commodities to its customers on a multiple-day horizon in a centralized manner. The supplier has to plan routes to deliver commodities from its depots to customers with the objective of minimizing inventory and routing costs. For each route, the starting depot, the ordered list of customers visited, as well as the quantities of each commodity to be delivered at each stop must be decided. With an average of 30 commodities, 16 depots, and 600 customers spread across a continent, our instances are orders of magnitude larger than those in the literature. Existing algorithms do not scale. We propose a large neighborhood search (LNS) implemented in Julia. We make an academic version of the code as well as a dataset of industrial instances publicly available. An industrial version of the code is currently in production at Renault and run every day. We try to provide an industrial feedback on this project.

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**Classification de Session:** Julia & Graphs