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# Routing in air cargo networks

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## Abstract

During the sales process for air cargo, an airline has to find valid (and not necessarily only the fastest) routes for the quoted cargo through its given network of scheduled flights. In today's air cargo market, where airlines operate multi-hub-networks and offer many direct connections between airports as well as road feeder services (trucks between airports) this becomes a non-trivial task. Besides, possible routes of the cargo heavily depend on shipment details (e.g., size, weight, dangerous goods?) and its transport requirements (e.g., urgency, temperature, supervision).

In this talk we introduce the problem how to find a set of valid routes through an air cargo network and highlight the related regulatory and operational requirements from practice. We present a new algorithm CSAir, derived from the connection scan algorithm (CSA) addressed to public transit networks, that incorporates many practical requirements and allows us to find valid air cargo routes extremely fast. Finally, we evaluate the performance of the algorithm on a set of real networks of different airlines.

**Keywords:** air cargo, timetable routing, multi criteria routing

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