TRANSP-OR

Optimization and
Simulation
Spring 2016

Maknoon, Markov

Project 4, Group 4: Airline yield management

Airline yield management

Changes to the setup introduced by the simulation project:

None.

Tasks:

1. Identify the decision variables of the airline yield management problem

2. Define the objective function.

3. Design an optimization algorithm and apply it to solve the problem. The value of the objective function is evaluated by discrete event simulation.

4. Like in the simulation project, the objective function can reflect various policies of the decision maker: whether they want to optimize over the average, best, worst, or certain percentile of the objective function distribution. Decide what your position is and justify it, or present results for several alternatives.

5. Use your creativity and define a new policy to offer seats to the customers which can improve the revenue. You can use the existing literature to inspire yourselves.

6. The case described in the simulation project is for a flight that happens on a week day. The airline company has decided to launch a new weekend flight from Geneva to Washington. For this flight, the product configuration is the same but the demand is lower. It can be constructed using the same formula, where the value of γ for passenger classes Business, Leisure 1 and Leisure 2 is 0.2, 0.4, and 0.2, respectively. The values of α and β stay unchanged. Apply your algorithm to this new case to determine the best strategy to offer products in order to maximize the revenue.

7. Compare your best strategy for the week day and the weekend flights.

    Bonus question: Design a series of what-if scenarios of the impact of the demand parameters given in your problem on the value and structure of the best solution. Interpret the results.