A Data-Driven Car Recommender for US Dealerships

**Problem Statement**

Providing vehicles matching customer demand is key for the business of every car manufacturer.

Develop a [quantitative framework](#) to allocate the most appropriate vehicles to each dealership.

**Recommendation System**

Leverage historical sales to infer best car configurations at each dealership.

1. Run [low-rank matrix factorization](#) with side information
2. Estimate how many of each car configuration would be sold at each dealership
3. Compare output with the observed data

**Results**

- Revenue is increased by 9% and sales happen 20% faster
- 86.5% of the models have lower days on lot and 61.5% of the models have higher prices

**Optimization Framework**

Find alternative sets of options to keep total price below a threshold.

**Use Case: A California Dealer**

- Revenue increased by 30 million (~11%)
- Days on Lot decreased by 7 days (~20%)

**Implementation in Production**

- Fully working, [tunable](#) recommendation system in production
- Output integrated with current process
- Ability to evaluate performance according to business metrics
- Extensive handover document to transfer ownership to BMW