COIL Challenge 2000 Description Task

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Modelling Methodology

The modelling method used to build our prediction model was a Mask Perceptron (Kowalczyk and Ferra 1994) with Boosting. The original data was then analysed in the light of this model using a multi-dimensional visualisation tool.

Description of Caravan Policy Holders

The caravan policy holders tend to be wealthier people who spend more on car insurance (i.e., greater than 1000 NLG), and who spend more than 100 NLG on fire insurance. People who have boat insurance are also more likely to be caravan policy holders.

From this profile, we can infer that caravan policy holders tend to be more affluent people who can afford to travel. They may have a more expensive car, which is sufficiently powerful to tow a caravan. They are more likely to have fire insurance due to the need to carry liquid propane gas for cooking in the caravan. In some cases, their interest in travelling around the countryside extends to having a boat.

We can assign a score to each customer that reflects the likelihood of a customer having a caravan policy. We can calculate this score using the following model, where each term in the model corresponds to a combination of tests on the customer's data. If a term is true for a customer, then the corresponding weight for that term is added to the customer's score. Customers with a higher score are more likely to have a caravan policy.

Prediction Model

Term 1:	Contribution car policies ≥ 1,000 NLG	[weight 0.185273]
Term 2:	Average income ≥ 68,000 NLG	[weight 0.048236]
Term 3:	Contribution fire policies ≥ 100 NLG And %households with 1 car in customer's suburb ≥ 50%	[weight 0.050628]
Term 4:	Purchasing power class ≥ 5 And Contribution fire policies ≥ 200 NLG	[weight 0.044266]
Term 5:	Contribution boat policies ≥ 1 NLG	[weight 0.170989]
Term 6:	%households with 30-35,000 NLG income in customer's suburb ≥ 24%	[weight -0.032441]
Term 7:	Contribution car policies ≥ 1000 NLG And Contribution fire policies ≥ 100 NLG	[weight 0.055836]
Term 8:	%households with 45-75,000 NLG income in customer's suburb ≥ 20% And Average income ≥ 68,000 NLG	[weight 0.029023]
Term 9:	Contribution fire policies ≥ 500 NLG	[weight -0.06239]
Term 10:	Contribution fire policies ≥ 100 NLG And Contribution car policies ≥ 500 NLG And %households with 1 car in customer's suburb ≥ 50%	[weight 0.015703]

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References

A. Kowalczyk and H.L. Ferra (1994). "Developing Higher-Order Networks with Empirically Selected Units". In *IEEE Transactions on Neural Networks*, 5(5), September 1994, pp. 698-711.