

The GenIQ Model© Software: Benefits

The following features of the GenIQ Model© directly translate into significant value-added benefits of the GenIQ Software.

1. The GenIQ Model has maximum model lift, as its best-of-generation solution estimates the rank-order likelihood of response or contribution of profit.

Value-added: Greater response/profit – increased cost efficiency in DM programs.

2. The GenIQ Model is more reliable than the logistic and ordinary regression models because it lets the data suggest the equation form without any assumptions. The regression models require the rigid assumption of the equation form (sum of weighted predictor variables), and a host of other untenable assumptions.

Value-added: Greater model reliability – increased confidence in the predicted DM program results.

3. The GenIQ Model is automatically built in a timeframe favorably commensurate with the input file size. Model validation is quickly and easily performed.

Value-added: Greater rate per model built – increased human capital.

4. The GenIQ Model can serve as a productivity tool for data analysts who build models in the DM Space where maximizing model lift is the bottom-line objective.

Value-added: Greater productive labor – increased quantity of models built.

5. GenIQ Model can serve as a specialty tool for experts who want control over the individual processes: selecting among the important original variables, assessing the predictiveness of the newly data mined variables, and developing the best model with maximum model lift.

Value-added: Greater "creativity" afforded – increased quality of models built and individuality of human capital.

6. The GenIQ Model provides automatic data mining – an inherent by-product of the genetic programming methodology. Data analysts can export the genetically constructed variables into an independent model application.

Value-added: Presents a hybrid statistics-ML paradigm that yields a utile alternative for DM modeling. (See article [A Hybrid Statistics-Machine Learning Paradigm for DM Modeling](#).)

7. The GenIQ Model provides a unique variable selection of important predictor variables, as it provides the ranking of the relationship between each predictor variable with the target variable – accounting for the presence of the other predictor variables jointly considered. This is in stark contrast to the statistical correlation coefficient, which provides the ranking of the linear-relationship between each predictor variable with the target variable – without considering the other predictor variables.

Value-added: Presents a hybrid statistics-ML paradigm that yields a utile alternative for DM modeling. (See article [A Hybrid Statistics-Machine Learning Paradigm for DM Modeling](#).)

8. "The GenIQ Model expands to fill the time available for model completion – guaranteeing the best model for the allotted time."

Value-added: See [The GenIQ-Parkinson's Law](#).

WHO & WHY

The standard statistical models of logistic and ordinary regression for binary and continuous target variables, respectively, have two weaknesses:

1. They do not address the DM objective of maximizing model lift – the customary performance measure used in the DM Space.
2. They do not have built-in data mining capability – the intelligence for constructing new variables with incremental predictiveness beyond the original variables.

Thus, Dr. Ratner invented the assumption-free, nonparametric GenIQ Model©, which addresses the weaknesses of the statistical DM problem-solution, by using the machine learning (ML) method of genetic programming (GP).

WHAT

GenIQ Software is the PC-based implementation of the GenIQ Model for building:

1. Classification model – the target variable is a binary (e.g., yes-no response).
2. Prediction model – the target variable is continuous (e.g., many-valued profit).

GenIQ Software is flexible during the data input and output processes:

1. Imports unlimited records and candidate predictor variables of any type (categorical, ordinal, and continuous).
2. Reduces the mandatory exploratory data analysis to only checking for implausible and impossible values – due to the consequences of features #1 and #5 above.
3. Eliminates the concern for finding outliers, and assessing their effects.
4. Accommodates efficiently the problem of missing data with genetic imputation.
5. Builds a resistant-to-overfitting GenIQ Model equation – due to a "smoothing" component in the fitness function.
6. Exports effortlessly the GenIQ Model equation into any independent application for error-free scoring of the model to an external file or database.

HOW

GenIQ Software has only four simple screens:

1. Input File – to indicate the input data location and file type (e.g., SAS®, SPSS®, SQL, Excel, text, and comma delimited).
2. Identify Variables – to identify the target and candidate predictor variables.
3. Genetic Parameters – to scan the default control settings for the run. Fiddling with the settings is rarely needed, as the GP-approach to maximizing model lift is quite resistant.
4. GenIQ Model – to view the model in its signature “tree” display, not the typical ML indiscernible "black box."

DISADVANTAGE

The GenIQ Model – represented as a tree – is difficult to interpret, in part, because it has no coefficients. Tyros and experienced analysts when interpreting a model unwittingly seek the regression coefficients, as they are the means to interpret the everyday logistic and ordinary regression models.

Non-DISADVANTAGE

The GenIQ Model – represented as a set of "branches" – lends itself to interpretation even without coefficients. The branches, which are actually small models that are defined with a few variables, can be explained with an understanding of the content domain of the variables. Viewing the GenIQ Model as such, data analysts and end-users acquire a comfort level for using the model that is otherwise difficult to understand and accept.

WHEN

Now, call Bruce at 516.791.3544, or e-mail him at br@dmstat1.com to set up a date and time for a ten minute e-demonstration of the GenIQ Software, after which you can get the GenIQ demo for a 2 week trial.