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LIONsolver
for life Science Industry

Massive amount of complex data is a big challenge nowadays. The role of data is inevitable but they don't have value unless we can create value from them. Life scientists, health communities and medical professionals are an important community which need to face with these massive and precious data. Medical professionals should effectively explore available data and make informed decisions in critical medical and health situations. Visual analytics is a key technology that improves understanding of the problem and bring visualization to the new level of usefulness. Visualization aspects allow individuals to interact with this massive amount of data and discover multiple set of relevancies among data in one place and time.
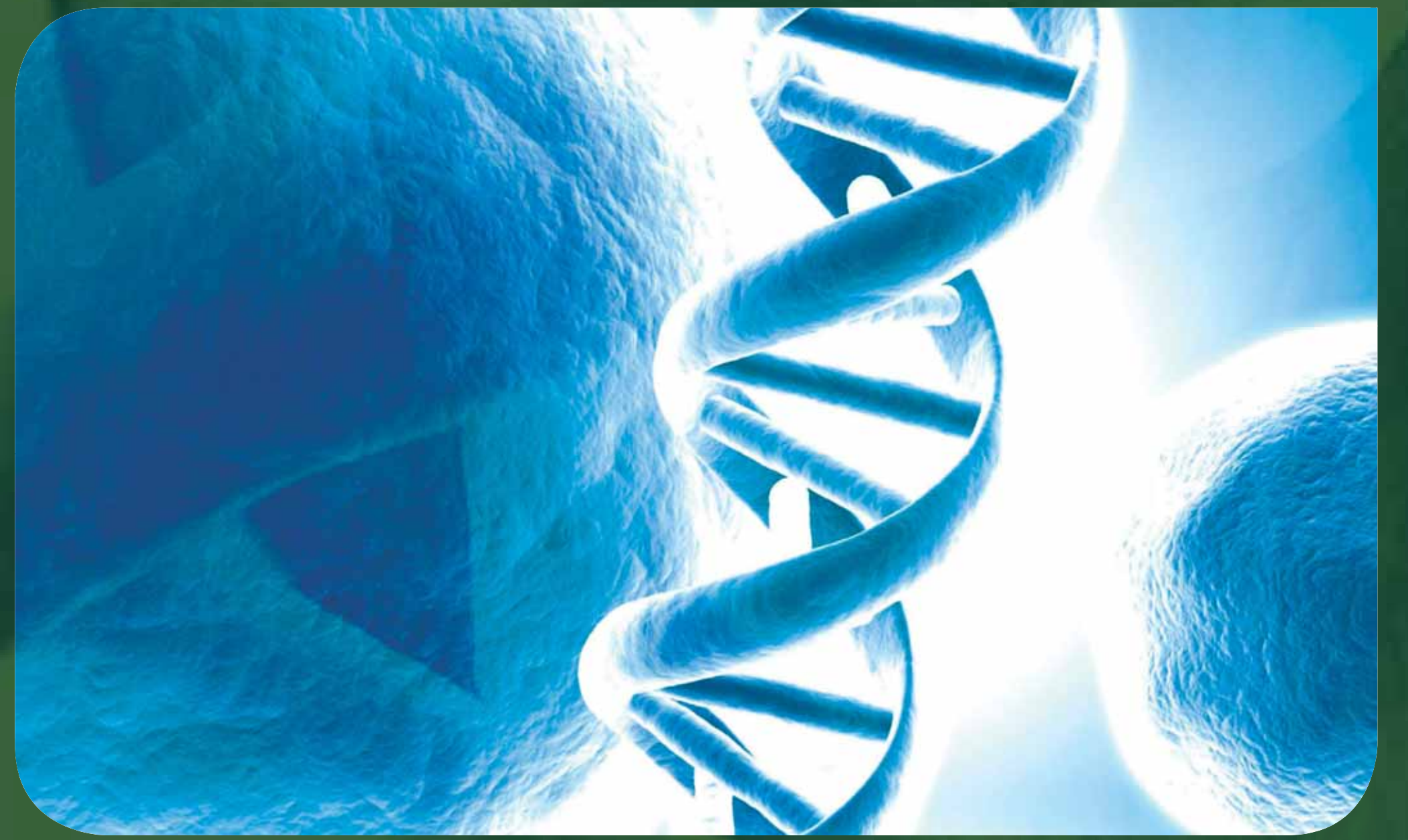
Software systems have critical role in almost all areas. They are solution to deal with big data by visualizing and obtaining insight from data. Here two real life study case ❶ which are treated by the innovative framework of LIONsolver demonstrated.

In health care area, the main objectives are;
▶ Well understanding available recourses by data analysis which lead to better outcome and effective medical decisions .

▶ Get insight from data and discover relationships from medical history of patients and make a better health care decisions.

Predicting heart disease have a critical value on further treatment of patients. Here data set of patient load in LIONsolver and classified as having [1] or not having [0] the heart disease.
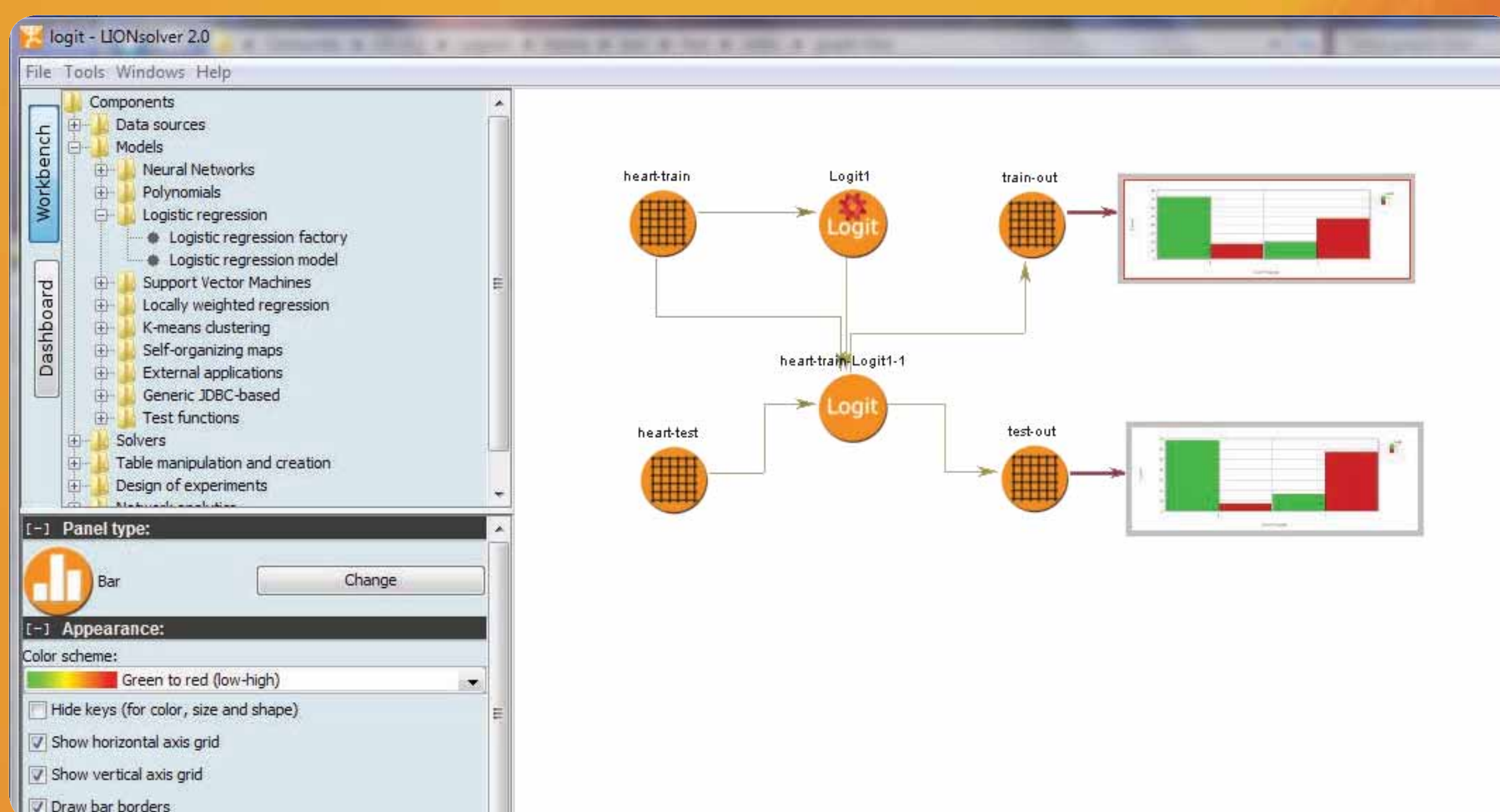
The configuration of LIONsolver's workbench

The steps are;
▶ Train the logistic predictor on the training set.
▶ Use a validation set to determine the best parameters for training.
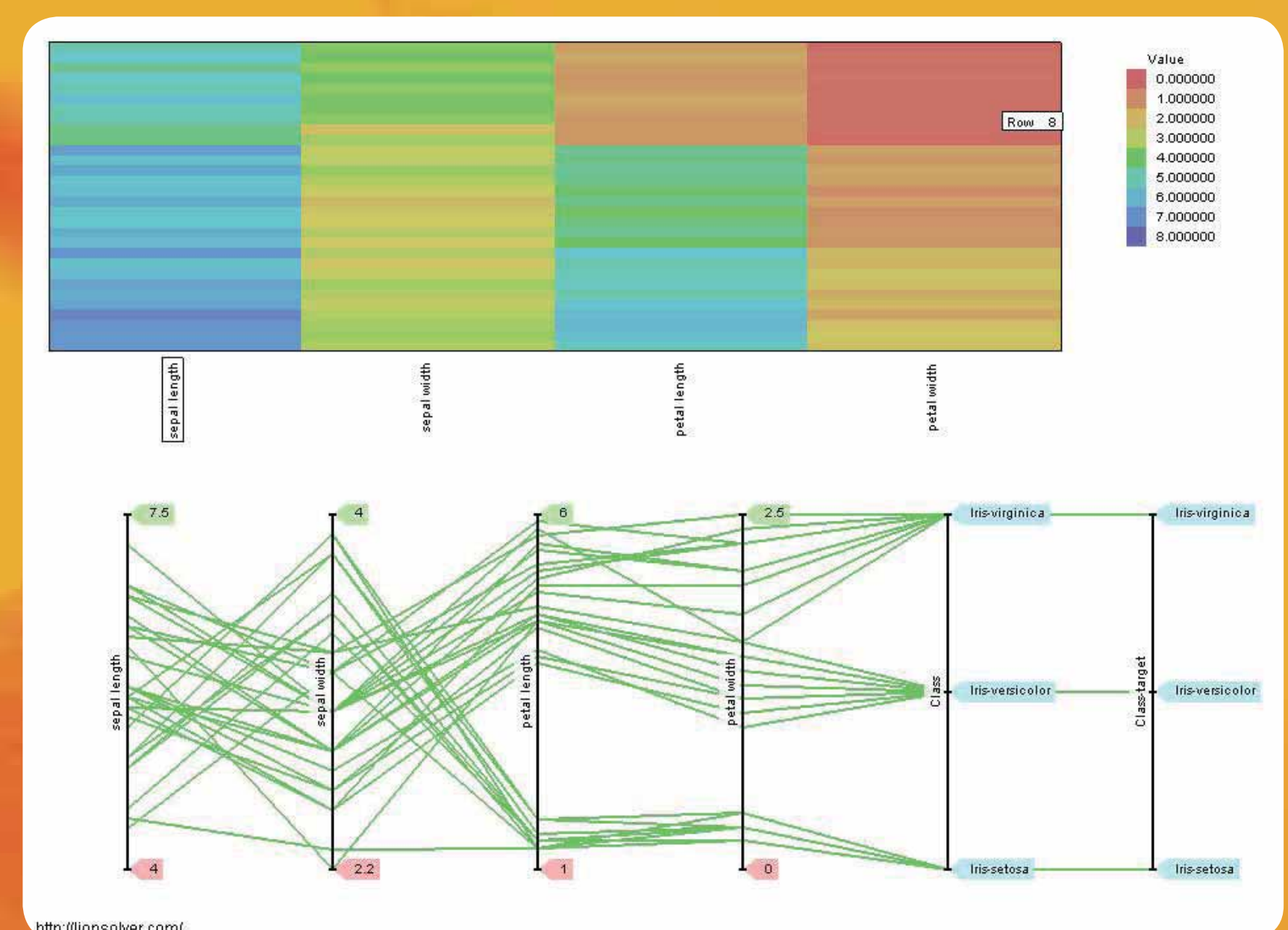▶ Obtain predicted probabilities by using the testing set.

Here the life science case study is, prediction of the class of iris plant ❶.
The data set contains 3 classes of 50 instances and the objective is to refers each class to type of iris plant.
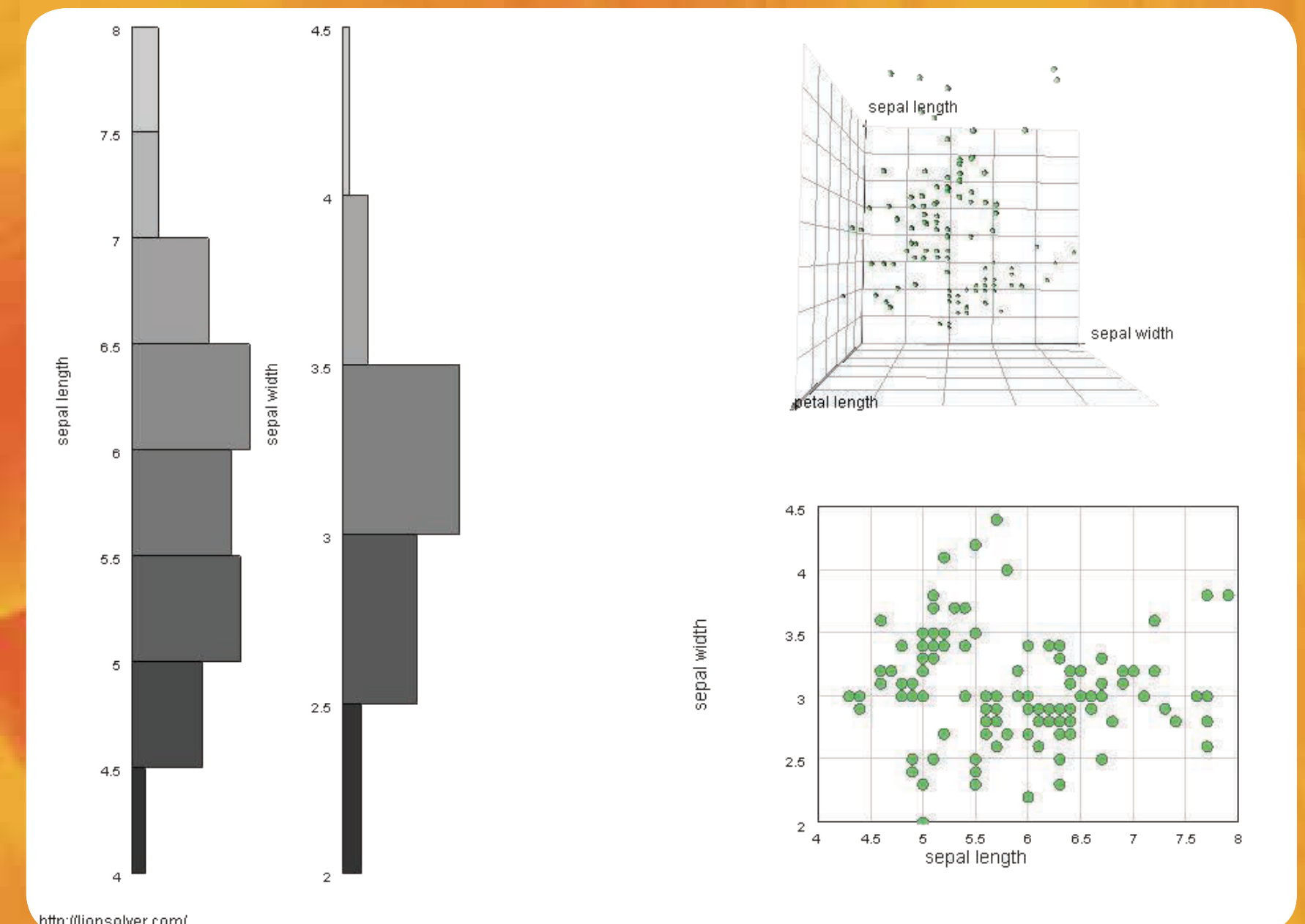
Four geometric measures of the flower: sepal length, sepal width, petal length, petal width visualize in Histogram(left), 7D plot (right top), Bubble chart (right down)

Visual analytics in action : Heat map (top), Parallel coordinates (down)

References
❶ Roberto Battiti, Mauro Brunato. The LION Way: Machine Learning plus Intelligent Optimization. Lionsolver, Inc. 2013.
❷ LIONsolver.com

INTERNATIONAL CAE CONFERENCE

lionsolver.com