To slove this problem, we first consider the Naive Bayes classifier. It is an extremely common probabilistic classifier based on the Bayes Theorem. It has found applications in various fields. But its usage is limited due to a very strong assumption made by the model. The model assumes that the input variables are independent of each other given the target class. This is a very strong assumption given the nature of real life data and the existence of various dependencies amongst real life variables.

Our solution to this problem it to use of Bayesian Networks. Bayesian network consists of variables represented by nodes and dependencies represented by edges of the network. Dependencies between input variables can be added by simply adding an edge between the nodes representing the two variables. The primary task involved in its training is the learning of conditional probability tables (CPTs) at each node. On learning the CPTs, the overall probability distribution of the network can be represented as the product of all the individual CPTs.

Now, the Bayesian Networks can handle dependencies between input variables, it cannot automatically detect these dependencies. It must be manually entered before the model training process. we want to find an algorithm that can detect dependencies of attributes. so, our final solution is applying Genetic algorithm. This algorithm is not a random search of best attributes but an evolutionary idea of "survival of the fittest" which finds the best attributes using their historical information.