

Evolutionary algorithms are optimization techniques inspired by the actual evolution of biological species. They use conceptually simple process of two repeating phases of reproduction and fitness-based selection, that iteratively evolves each time better solutions. Evolutionary algorithms receive a lot of attention for being able to solve very hard optimization problems, where other optimization techniques might fail due to existence of many local optima. Wide range of different variants of evolutionary algorithms have been proposed. In this thesis, we will focus on the area of Estimation of Distribution Algorithms (EDA). When creating the next generation, EDAs transform the selected high-fitness population into a probability distribution. New generation is obtained by sampling the estimated distribution. We will design and implement combinations of existing EDAs that will operate in business-specific environment, that can be characterized as tree-like structure of both discrete and continuous variables. Also, additional linear inequality constraints are specified to applicable solutions. Implemented application communicates with provided interfaces, retrieving the problem model specification and storing populations into database. Database is used to assign externally computed fitness values from real-world experiments to solutions in the population.