In many cases, the main difficulty in running a computer simulation software is the lack of correct set(s) of parameters for the system of interest to produce physically reasonable results\textsuperscript{2,4}. This problem leads to another problem—In order to obtain the accurate parameters, running many long and time consuming trial simulations is inevitable\textsuperscript{3,4}. This process may take a very long time, days at least—may take years, if done manually\textsuperscript{1}. This process can be automated by computational approach that utilizes optimization techniques. The focus of this talk will be the discussion of various optimization techniques. These optimization techniques are important, because decreasing the number of simulations is the key to the speedup of the whole process\textsuperscript{3}. There are many known optimization techniques. In general there are three major types of optimization techniques: gradient based, non-gradient based, and hybrid. This talk will survey the different optimization techniques under these categories with an emphasis on their algorithm, attributes, and resulting effect on the simulation.

References