Optimization Driven Design

Unconstrained multivariable optimization using Genetic Algorithms

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Problem

Implement a Genetic Algorithm and use it to find the global maxima of f_1 for $x, y \in [-5.0, 5.0]$.

$$\begin{aligned} f_1(x,y) &= sin(\omega x)^2 sin(\omega y)^2 e^{\frac{x+y}{\sigma}} \\ \omega &= 10 \\ \sigma &= 2 \end{aligned} \tag{1}$$

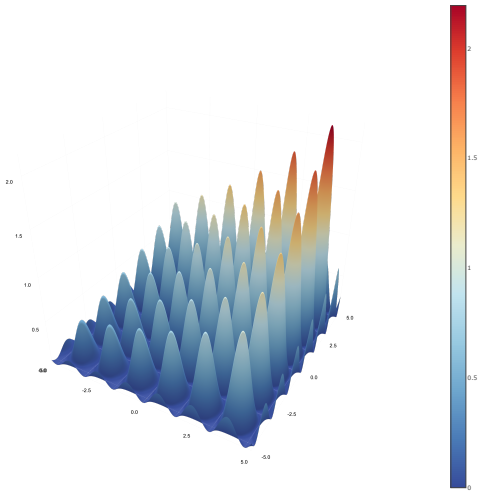

Figure 1: Function to be optimized.

Procedure

1. Understand the given problem.
2. Implement a Genetic Algorithm in Julia.
3. Use the Genetic Algorithm to solve the problem.
4. Hand in complete and working code (.ipynb or .jl file)

Voluntary problem

Modify your code so that it can handle objective functions $f(\boldsymbol{x})$ where $\boldsymbol{x} \in \mathbb{R}^n$.