Case Study 5

BIOE 498/598 PJ

Spring 2021

This Case Study has two options:

1. Use sequential optimization to find the global maximum of an unknown function.
2. Train an AI agent to play Tic-Tac-Go.

You are only required to complete one option.

Option 1: Sequential optimization with GPR

Your goal is to find the global optimum of an unknown (black box) nonlinear function. To begin, use the `install_github` function to install an R package with the unknown function.

```
install.packages("devtools")
devtools::install_github("bioe498/gprfun")
library("gprfun")
```

The function `testfun` should now be available. Type `?testfun` for information on calling this function.

Rules

1. The function is in two dimensions and the maximum is in the unit square $[0, 1]^2$.
2. You are only allowed 25 function evaluations to find the optimum.
3. You are allowed to use any code from the Rmd files presented in class.
4. You must turn in all code along with slides describing your approach.
5. Your code must begin with the command `set.seed(498)`. This ensures everyone receives the same sequence of random numbers.