Summary of example:

Multiple attributes determined by experiments, including the biophysics, ion channel distribution, and electrophysiological characteristics were used in designing the model. The task is to optimize the 16 channel density and kinetic parameters of the model. The stimulus amplitudes were -0.25, 0.05, 0.1, 0.15, 0.2 0.25 nA, respectively. Somatic subthreshold and spiking features extracted by eFEL from the model's voltage response were compared to the mean values of the same features extracted from experimental measurements from several cells of the cell type.

The additional mechanisms required by the model are in the mod_files folder. You must run the nrnivmodl
neuron command (on Linux) to obtain the necessary files.s
input file: opt_data_JMakara_OUR_features_selected_stim.json
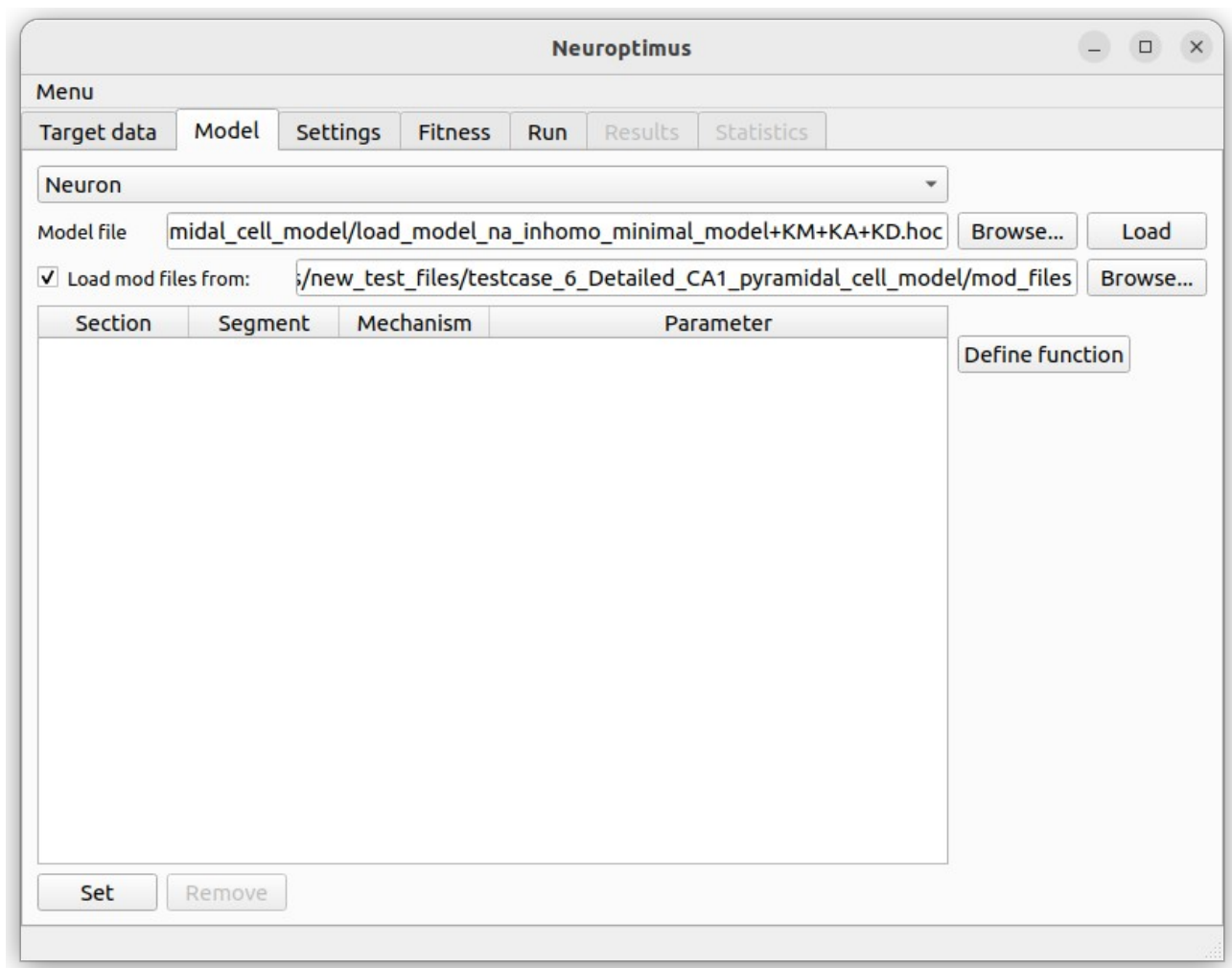model: load_model_na_inhomo_minimal_model+KM+KA+KD.hoc

Step-by-step instructions to run the example from the Neuroptimus GUI:
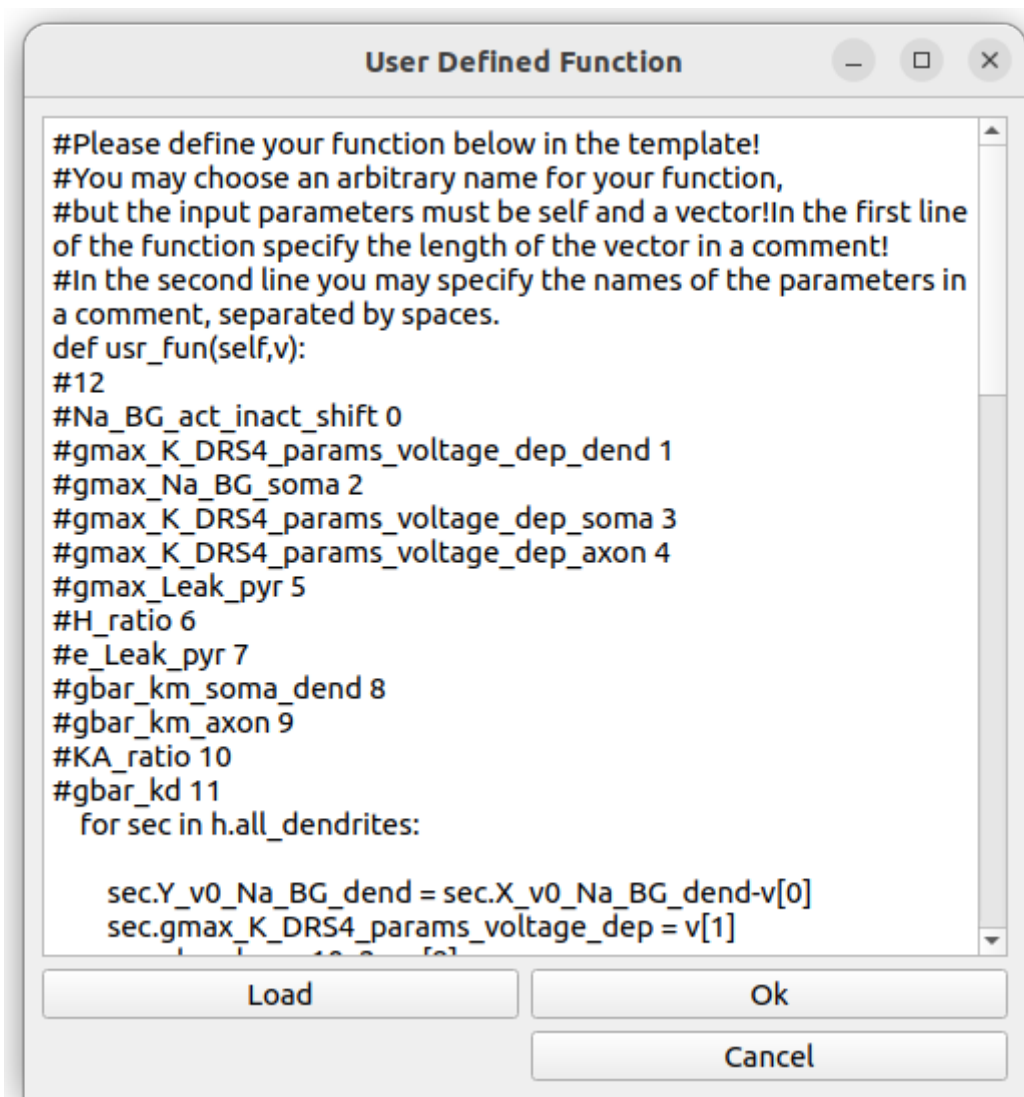Run „python3 neuroptimus.py -g" to start the GUI
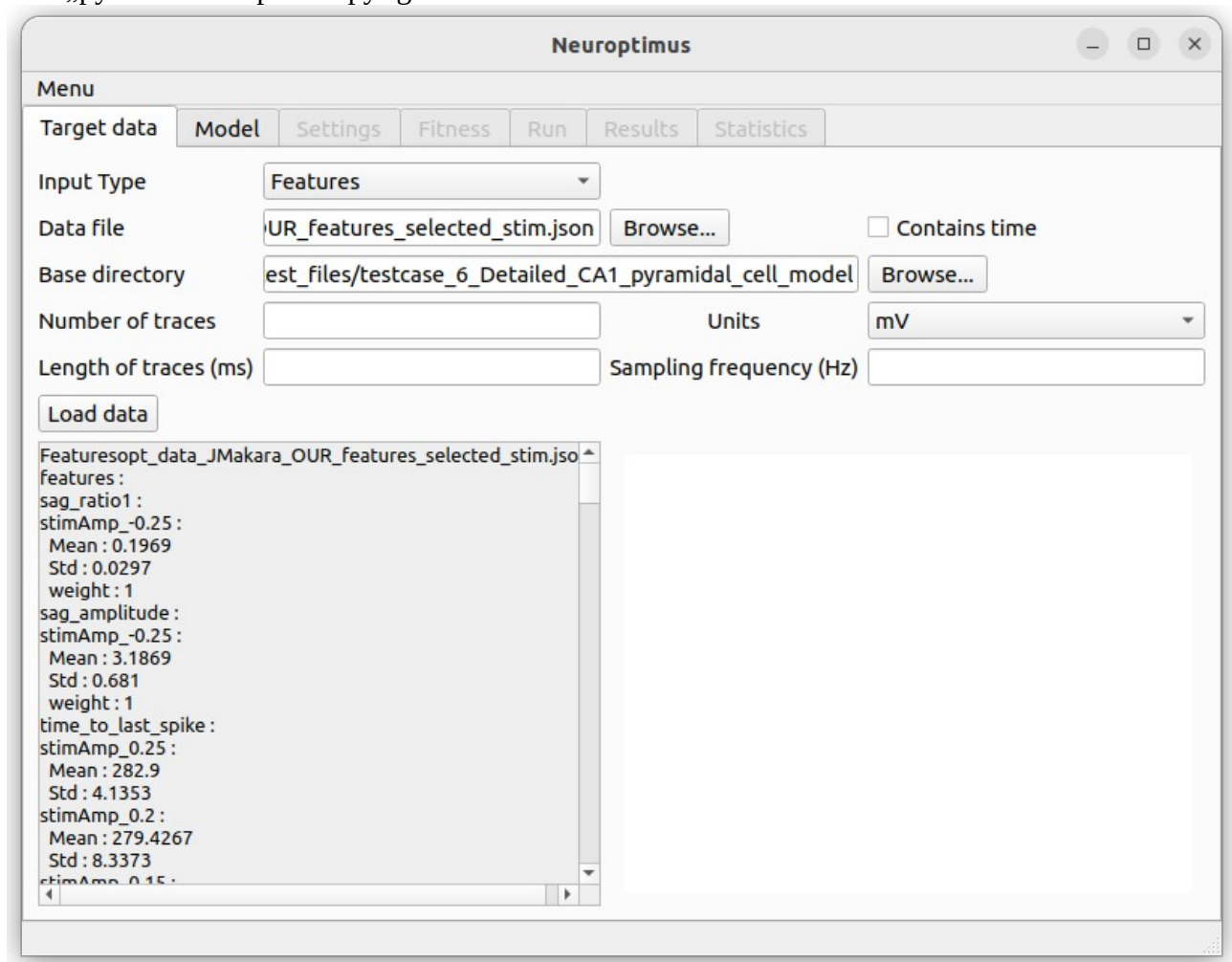
Set 'Input Type' to Features.
At 'Data File' load the target data, at 'Base Directory' choose the directory where you want to save the results and press 'Load data'. Go on by pressing the Model Tab.

Browse to the model file.

Check the "Load model files from" box and browse for the mod files directory (you should select the folder where the x86_64 directory and files were created by the nrnivmodl), then load the model.

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User Defined Function                    —  □  ✕

#Please define your function below in the template!
#You may choose an arbitrary name for your function,
#but the input parameters must be self and a vector!In the first line
of the function specify the length of the vector in a comment!
#In the second line you may specify the names of the parameters in
a comment, separated by spaces.
def usr_fun(self,v):
#12
#Na_BG_act_inact_shift 0
#gmax_K_DRS4_params_voltage_dep_dend 1
#gmax_Na_BG_soma 2
#gmax_K_DRS4_params_voltage_dep_soma 3
#gmax_K_DRS4_params_voltage_dep_axon 4
#gmax_Leak_pyr 5
#H_ratio 6
#e_Leak_pyr 7
#gbar_km_soma_dend 8
#gbar_km_axon 9
#KA_ratio 10
#gbar_kd 11
   for sec in h.all_dendrites:

       sec.Y_v0_Na_BG_dend = sec.X_v0_Na_BG_dend-v[0]
       sec.gmax_K_DRS4_params_voltage_dep = v[1]

        Load                              Ok

                                        Cancel
```
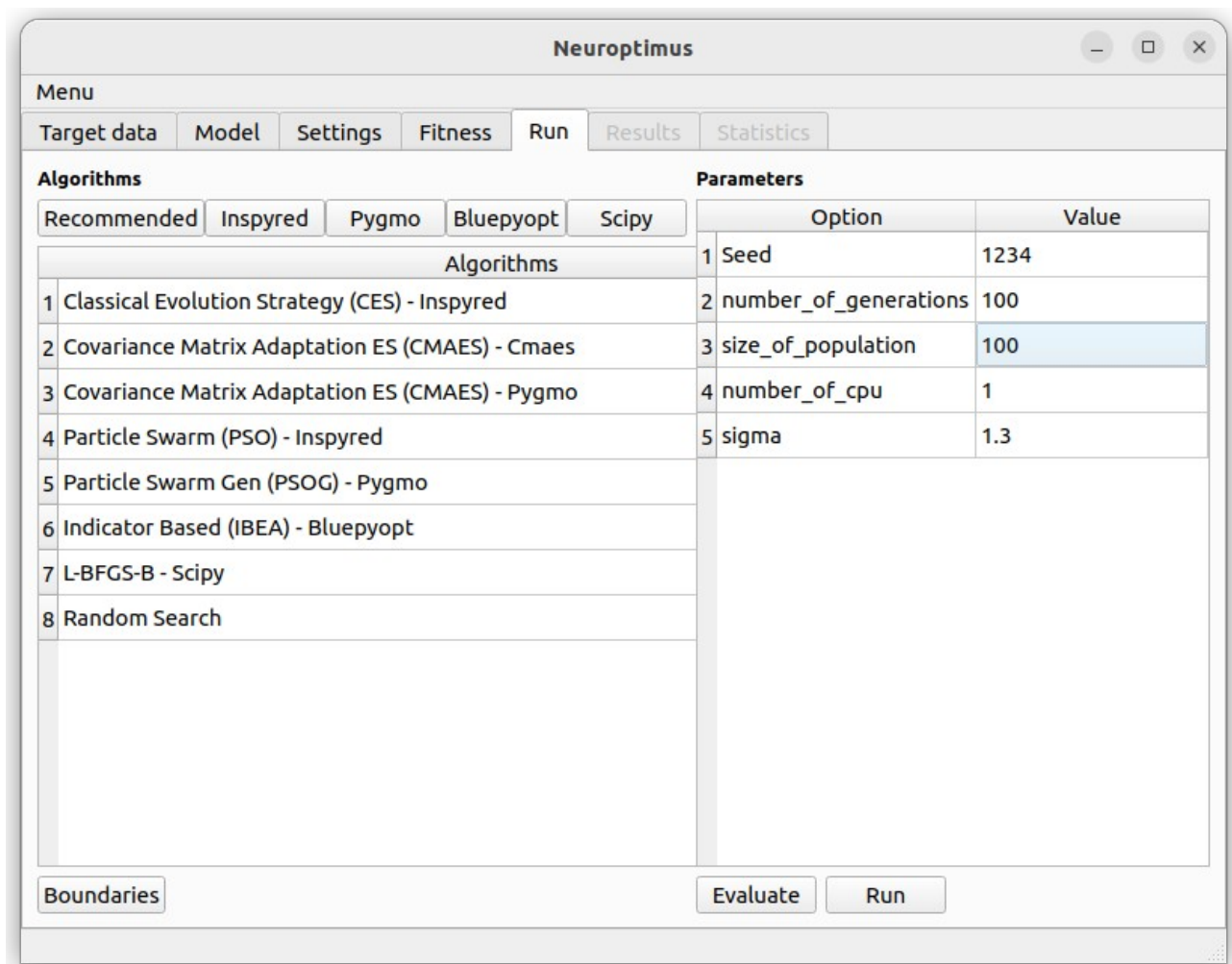
Press the 'Define Function' button to load the user defined function (text file in the folder of the model):
Press 'Ok', then go on by pressing the Fitness tab.
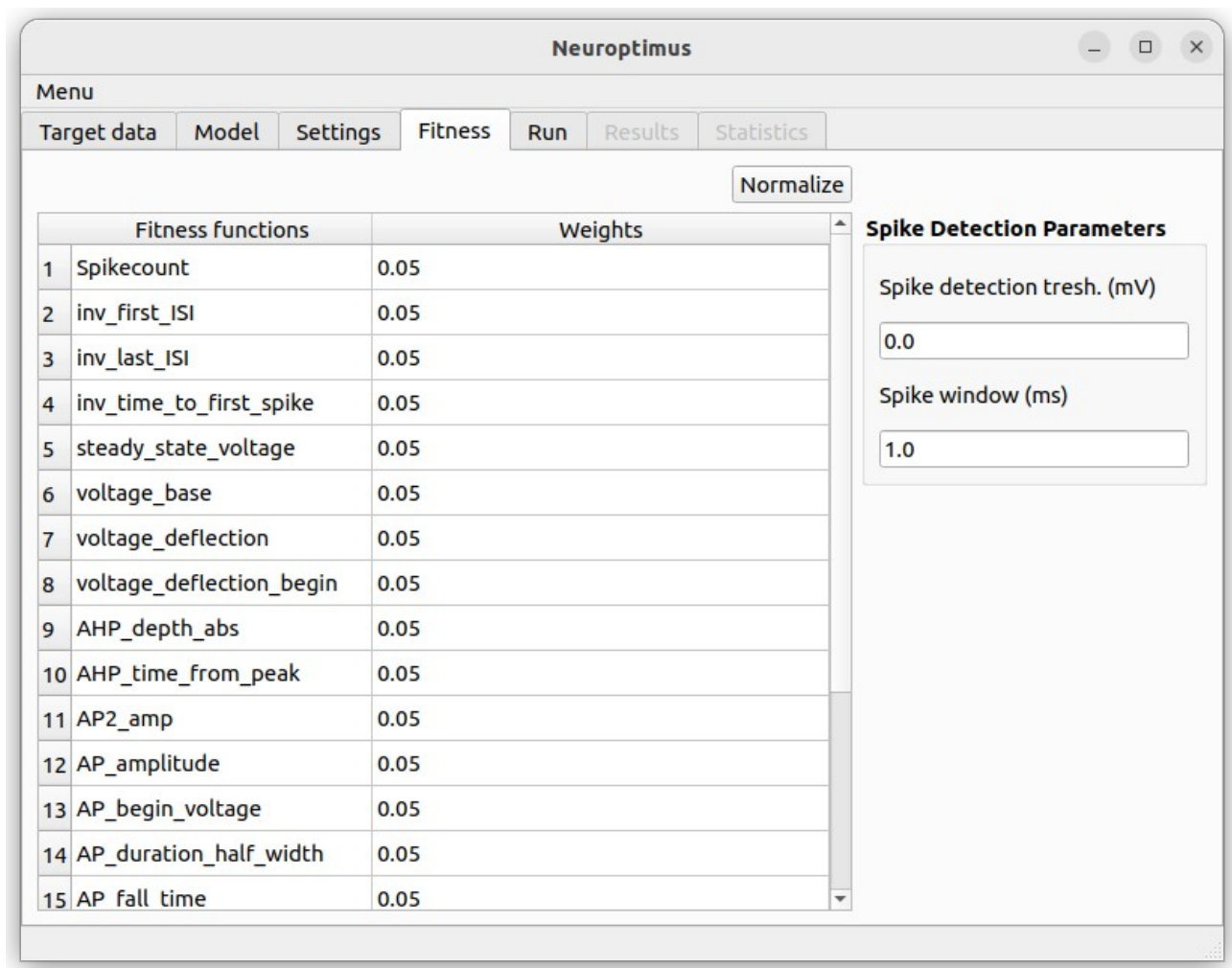
Choose fitness function(s), and define their weights. Go on by pressing the Run tab.

Select an algorithm, and press the 'Boundaries' button to define the boundaries of the parameters to be optimized: Press 'Set'.
Start the optimization pressing the 'Run' button.
Boundaries can also be loaded from a file.