

# Lecture 7: GOSET GUI



# GOSET GUI

- Easy and intuitive access to GOSET for any level of users
- Ability to stop and continue the simulation at any time
- Ability to store and retrieve parameter settings
- Support for storing and retrieving project

# Main Window



Menu bar

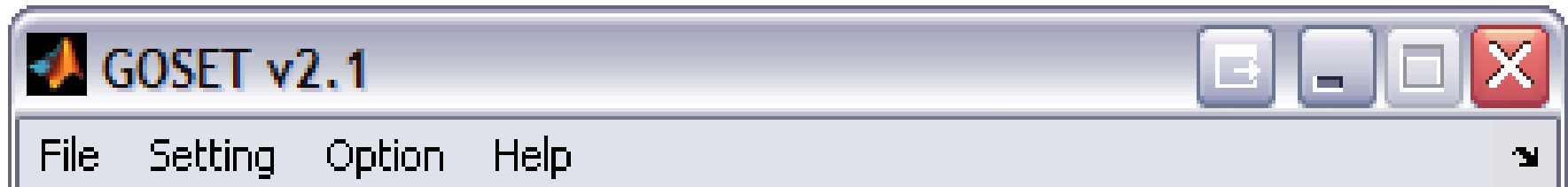
Evolution Status

Output Report

Start\Stop  
\Continue  
Buttons

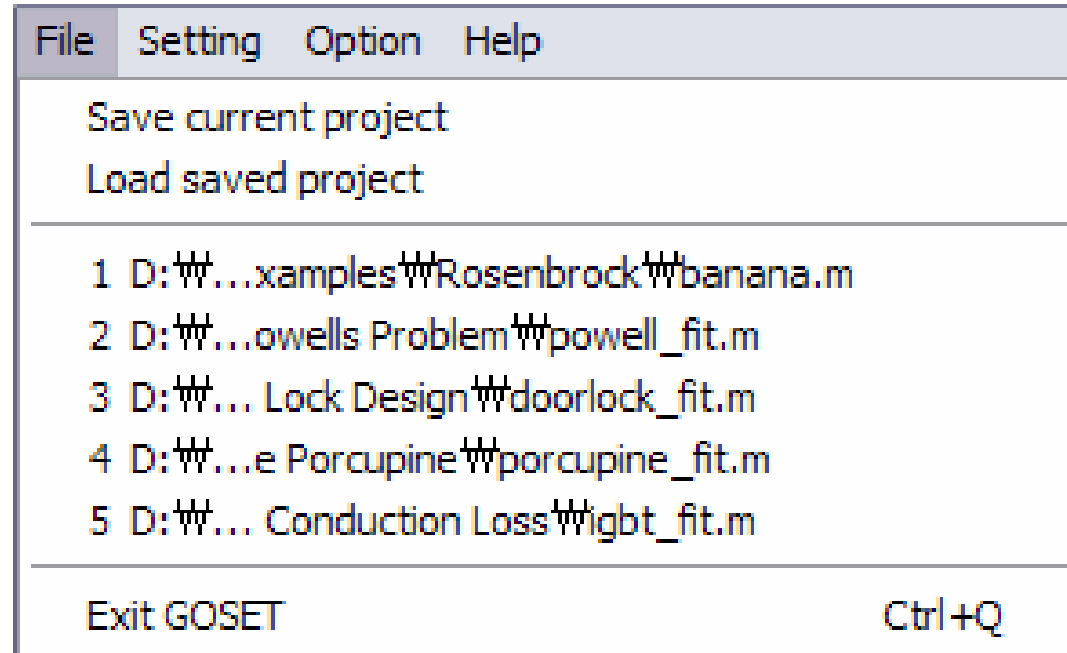
Main menu

# Menu Bar



- File
- Setting
- Option
- Help

## ■ File

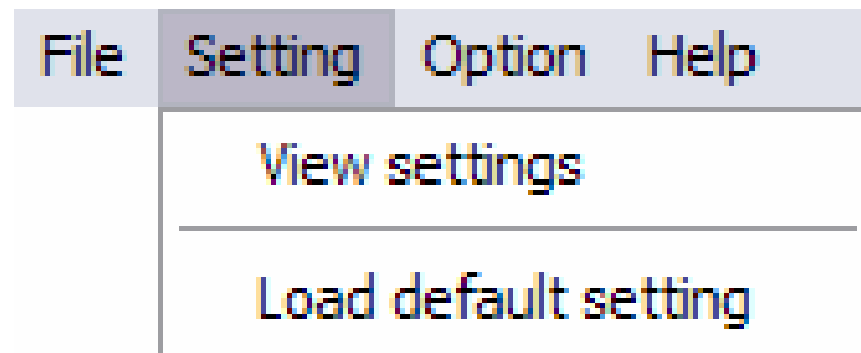


- **Save current project:** store all the information of current generation including the population information and the parameters of genetic operators
- **Load saved project:** Load a previously saved project
- **Recent files:** Five most recently accessed fitness function files are listed.
- **Exit GOSET:** Close GOSET GUI. The shortcut is Ctrl+Q



## ■ Setting

- **View setting:** Display the fitness function information, gene parameters of GA operators





Settings

Fitness function Gene parameters GA Operators Export to text file

-----  
Fitness function information  
-----

Filename : 'powell\_fit.m'  
Path : 'E:\Documents\Research\GOSET\SourceCodes\goset 2.1 examples\...  
Powells Problem\'

Number of objective functions : 1  
Optional data for fitness function : none

-----  
End of fitness function information  
-----

GOSET v2.1

Settings

Fitness function   Gene parameters   **GA Operators**   Export to text file

---

Parameters for GA operator

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Fundamental parameters

Number of generations to evolve	GAP.fp_ngen	100
Initial population size	GAP.fp_ipop	100
Population size	GAP.fp_npop	100
Number of objective functions	GAP.fp_nobj	1
Objective to optimize	GAP.fp_obj	1

Diversity control parameters

Activate diversity control	GAP.dc_act	Yes (1)
Diversity control algorithm	GAP.dc_alg	4
Diversity control applied space	GAP.dc_spc	Parameter space (1)
Minimum threshold (Algorithm 1)	GAP.dc_mnt	0.02
Maximum threshold (Algorithm 1)	GAP.dc_mxt	0.1
Number of trials (Algorithm 2)	GAP.dc_ntr	3

GOSSET v2.1





**Settings** [Maximize] [Minimize] [Close]

Fitness function **Gene parameters** GA Operators Export to text file

-----  
Gene parameters  
-----

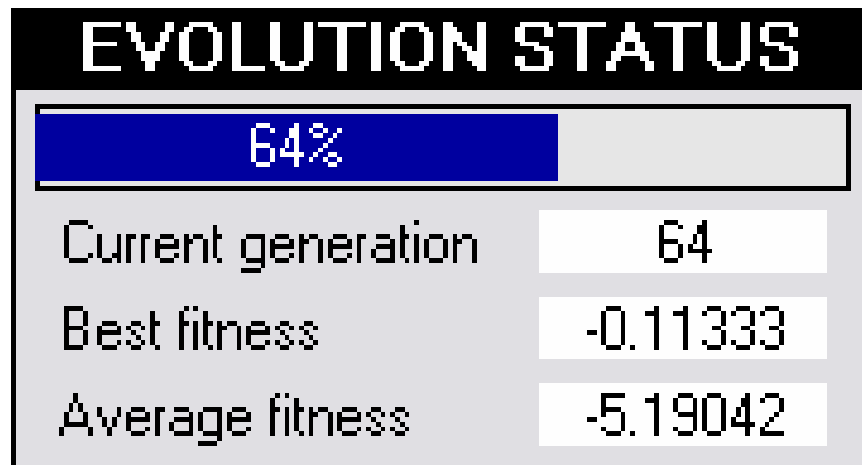
Total number of genes: 4

Gene No.	Description	Maximum	Minimum	Type	Chrom ID
1	gene #1	2	-2	Linear	1
2	gene #2	2	-2	Linear	1
3	gene #3	2	-2	Linear	1
4	gene #4	2	-2	Linear	1

-----  
End of gene parameters  
-----

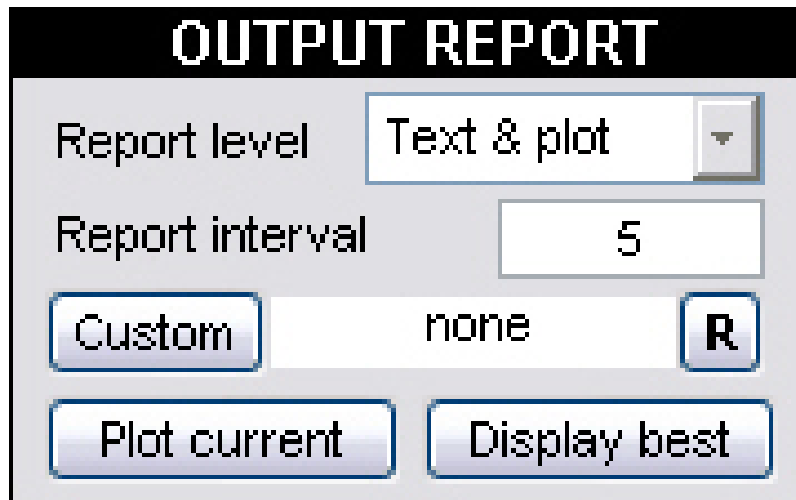
GOSSET v2.1

# Evolution Status



- Shows generation number, the best fitness value, and the average fitness value
- The progress bar visualizes the evolution process

# Output Report



**OUTPUT REPORT**

Report level: Text & plot

Report interval: 5

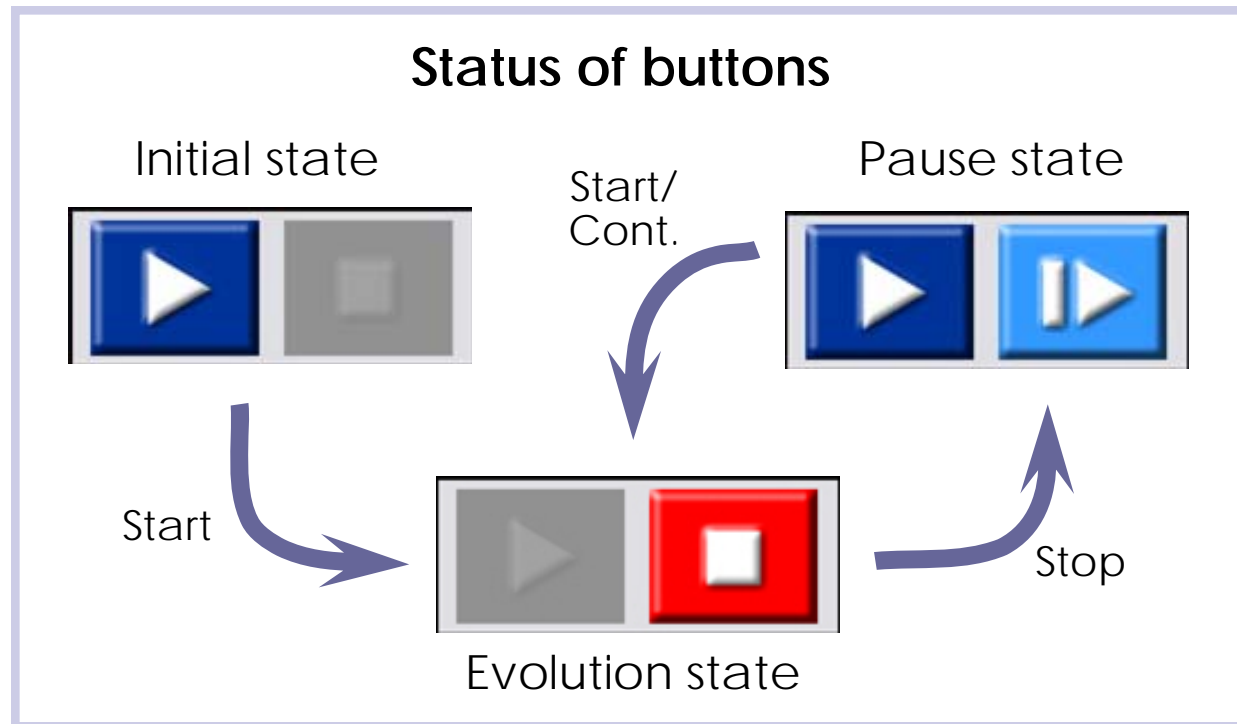
Custom none R

Plot current Display best

- Report level:
  - None
  - Text only
  - Text and plot
- Report interval
- Report computation time:
- Plot current: the plot of current generation
- Display best: show the actual value of the best individual

# Start/Stop/Continue Buttons

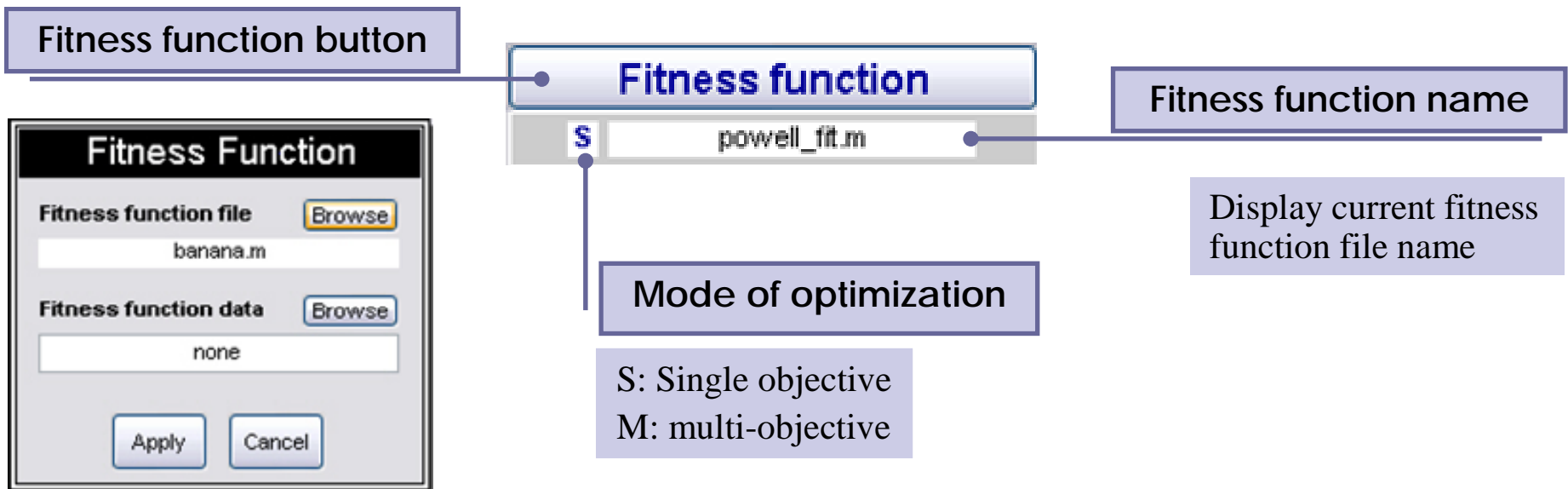
- Start/Stop/Continue buttons are enabled and disabled depending on the situation



- If start button pressed in pause state, all data is lost and evolution starts from generation 1

# Main Menu

- The fitness function information, the definition of the genes, plotting parameters and the genetic operator parameters are defined
- **Fitness function**



## ■ Gene parameters

- The total number of genes, their description, maximum values, minimum values, gene types, and the chromosome ID are defined.

**Gene parameters**

Total number of genes

Select the gene number to edit

Parameters of the gene # 1

Gene description

Minimum gene value

Maximum gene value

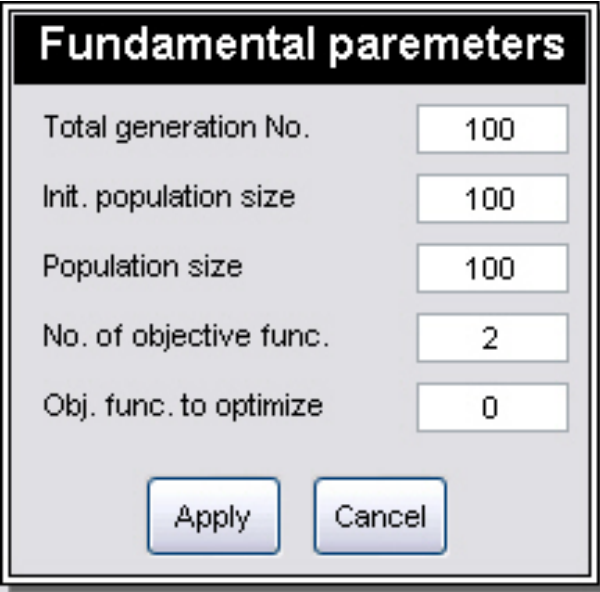
Gene type

Chromosome ID number

Apply Cancel

## ■ Fundamental parameters

- The total number of generations for evolution, the initial population size, the regular population size and the objective function number for the optimization are defined



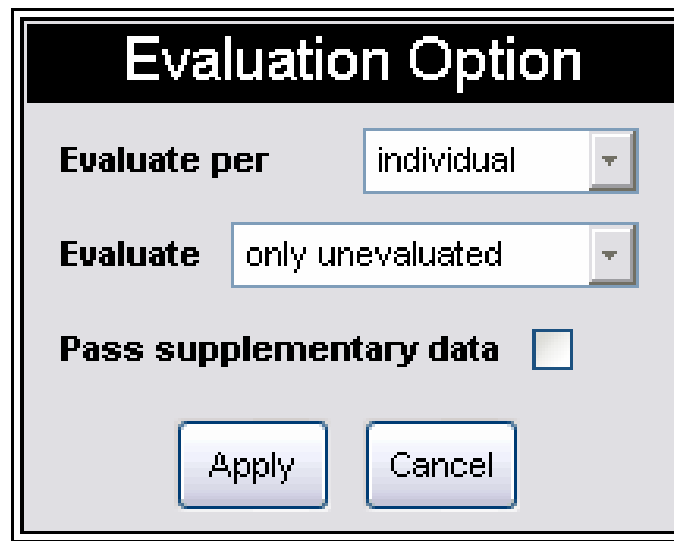
Fundamental parameters	
Total generation No.	100
Init. population size	100
Population size	100
No. of objective func.	2
Obj. func. to optimize	0

Apply Cancel

- For multi-objective optimization, use 0 for the optimization function to optimize

## ■ Evaluation option

- The user can choose whether to evaluate all the individuals or to evaluate only the unevaluated individuals



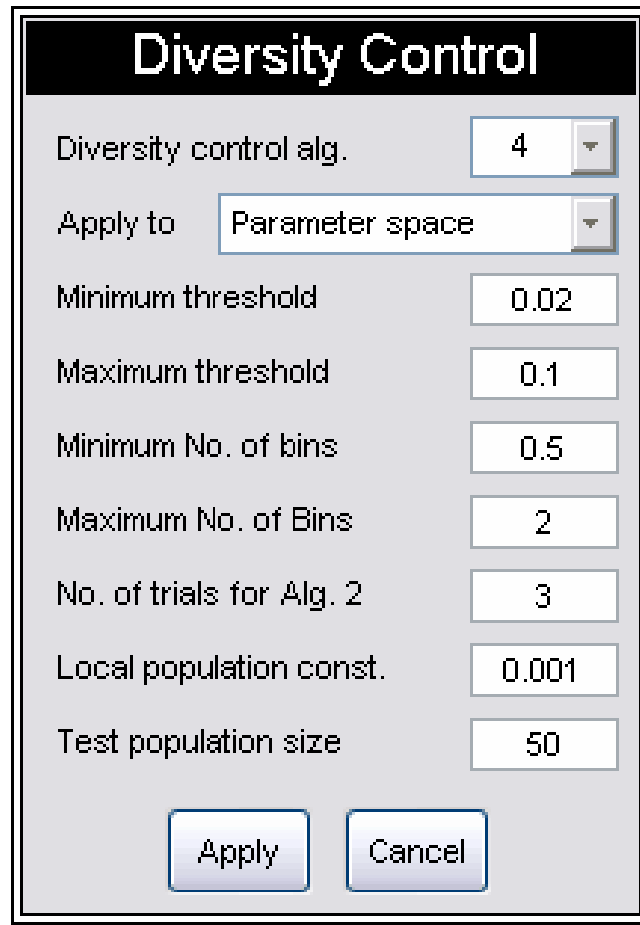
The image shows a dialog box titled "Evaluation Option". It contains three settings: "Evaluate per" set to "individual", "Evaluate" set to "only unevaluated", and "Pass supplementary data" which is an unchecked checkbox. At the bottom, there are two buttons: "Apply" and "Cancel".

Evaluation Option	
Evaluate per	individual
Evaluate	only unevaluated
Pass supplementary data	<input type="checkbox"/>
Apply    Cancel	



## ■ Diversity control

- Diversity control can be activated or deactivated



The image shows a dialog box titled "Diversity Control" with a black header. It contains several settings for diversity control, each with a corresponding input field or dropdown menu. At the bottom, there are "Apply" and "Cancel" buttons.

Parameter	Value
Diversity control alg.	4
Apply to	Parameter space
Minimum threshold	0.02
Maximum threshold	0.1
Minimum No. of bins	0.5
Maximum No. of Bins	2
No. of trials for Alg. 2	3
Local population const.	0.001
Test population size	50

## ■ Elitism

- Elitism has ON/OFF toggle switch to activate or deactivate it

