DEEC
DEPARTAMENTO DE ENGENHARIA ELETROTÉCNICA E DE COMPUTADORES
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Applied Computational Intelligence MEEC/MECD (2022/2023 – 1º Sem)

Evolutionary Optimization (Examples for Discussion)

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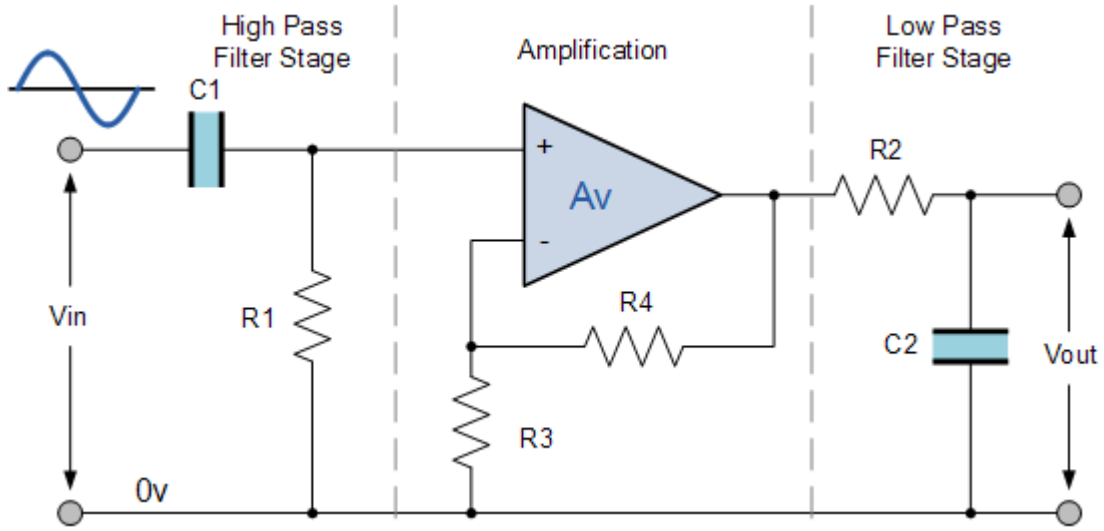
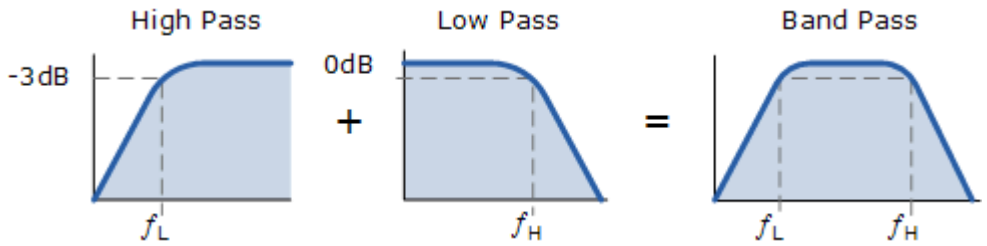
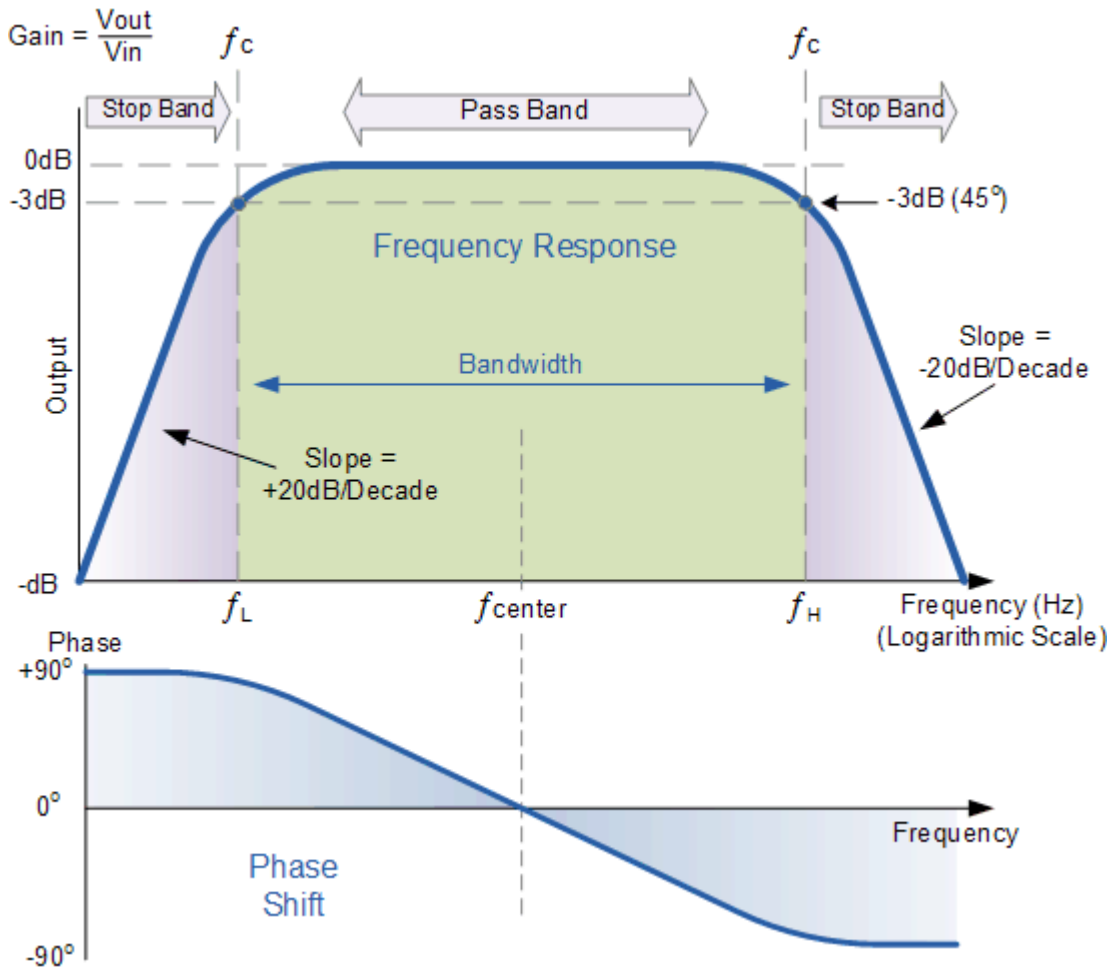
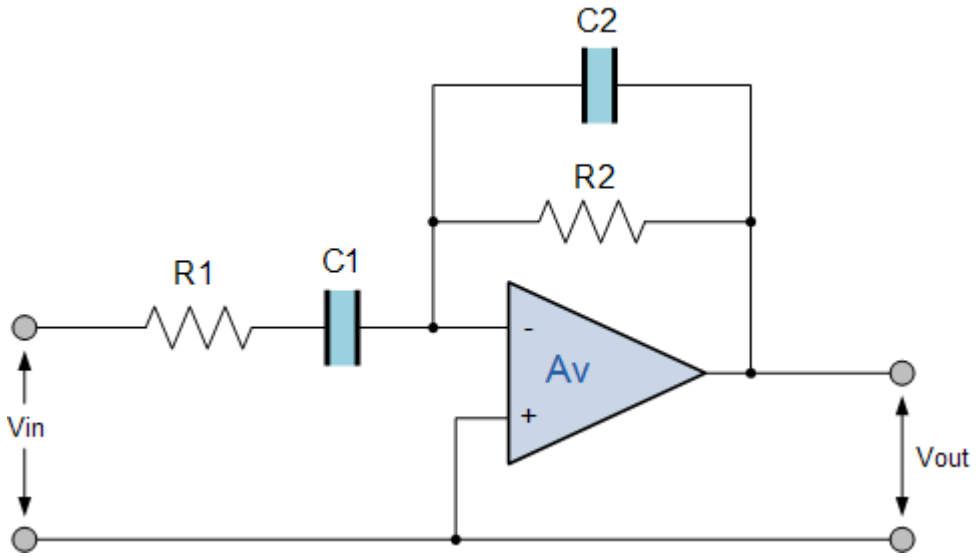
Assume you want to use an EA to optimize the design of the presented Band Pass Filter. (assume na ideal ampop)
Which are the design variables? Which is the dimension of the search space?
Which are the evaluation matrics to take into account?







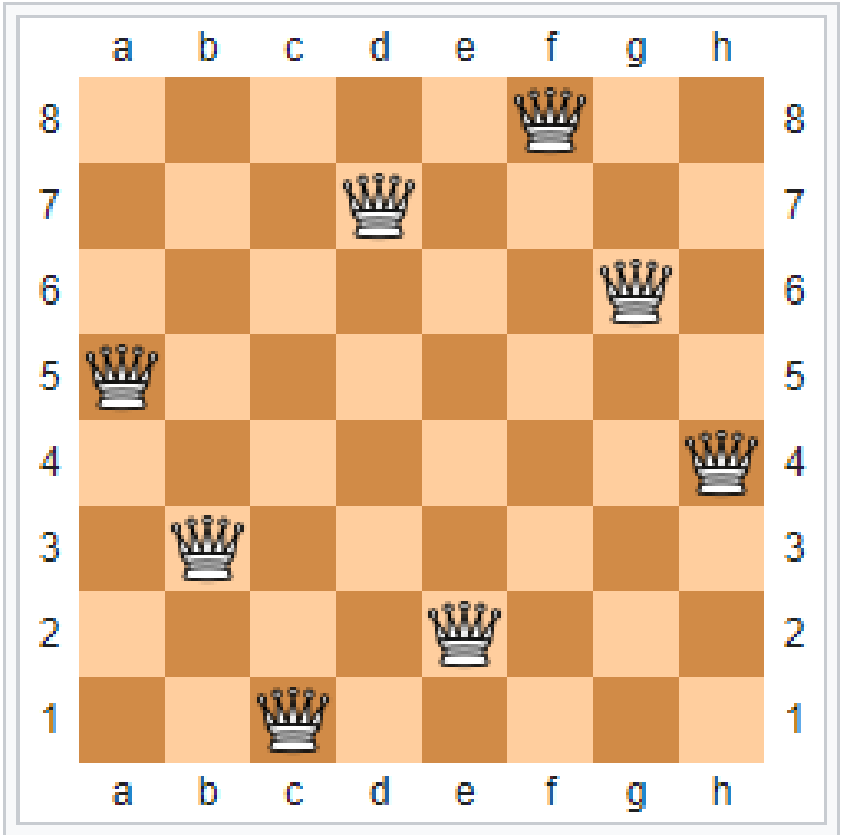
Assume you want to use an EA to optimize the design of the presented Band Pass Filter. (assume na ideal ampop)
Which are the design variables? Which is the dimension of the search space?
Which are the evaluation matrics to take into account?
Will we have one or more solutions? Why? Give exemple of some possible constraints?



$$Voltage\ Gain = -\frac{R_2}{R_1}, \quad fc_1 = \frac{1}{2\pi R_1 C_1}, \quad fc_2 = \frac{1}{2\pi R_2 C_2}$$

8 Queens Puzzle

- Can we do it with EA?
- How many variables?
- How to represent the chromossome?
- Which would be the cost function?
- How should we rate the solutions?



Sudoku Puzzle

- Can we do it with EA?
- How many variables?
- How to represent the chromossome?
- How large is the search space?
- Which would na acceptable cost function?
- How should we rate the solutions?

5	3			7				
6			1	9	5			
	9	8					6	
8				6				3
4			8		3			1
7				2				6
	6					2	8	
			4	1	9			5
				8			7	9

TSP with Constraints

- Can we do it with EA?
- How many variables?
- How to represent the chromossome?
- How large is the search space?
- Which would na acceptable cost function?
- Give some exemples of possible hard and soft constraints.