

() , ()

NLP-GA

*

(// : // :)

(GA)

GA (NLP)

GA (HBMO)

(LM)

NLP

()

:

...

(NLP)

NLP (1989) Ormsbee et al.

Obhadad@ut.ac.ir :

*

(2003) Moradi-Jalal et al.

NLP

GA (2005) Reis et al.
(LP-GA)
(SDDP)

SDDP

(2008) Attarzadeh et al.
LP-GA

NLP

(MILP)

GA

LP

LP-GA

(2009) Cisty

GA

(1995) Mackle et al.

()

LP

(GA, Genetic Algorithm)

GA

Moradi-Jalal & Rodin

(GA)

(2002)

GA

(2004) Moradi-Jalal et al.

(2007) Bozorg Haddad & Marino

(HBMO, Honey Bee Maiting)

Rajabpour

(2008) & Afshar

GA NLP

(PSO, Particle Swarm Optimization)

GA

(NLP)

(P_c)

$$\begin{aligned} & : X = (x_1, x_2, \dots, x_n) \\ \text{Max. } & f(X) \end{aligned}$$

GA

$$g_i(X) \leq b_i \quad i = 1, 2, \dots, m \quad ()$$

$$X \geq 0$$

$$n \quad = g_i(X) \quad = f(X)$$

(P_m)

$$= g_i(X) \quad = f(X)$$

GA

(Hillier and Liberman,

.1980)

(SLP)

) (SQP)

(

.(GRG)

(P_c)

(GA)

GA

GA

(P_m)

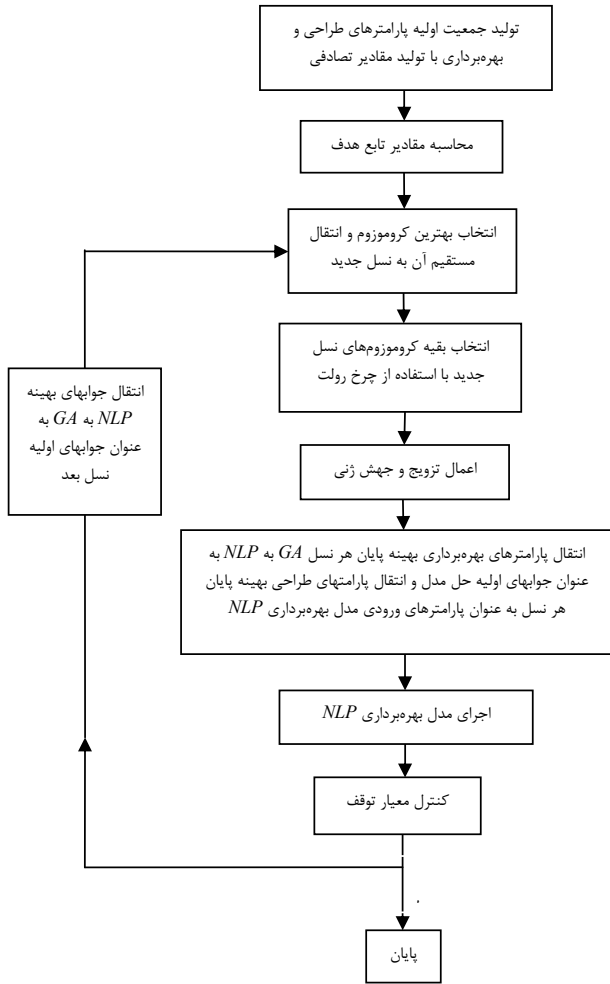
NLP

NLP-GA

NLP-GA

()

NLP



NLP

NLP GA

GA

GA

NLP

NLP

NLP

NLP

GA

GA

NLP-GA

GA

NLP

Excel Lingo

GA NLP

Visual

GA NLP

Basic

GA (Moradi-Jalal et al., 2003) LM
 HBMO (Moradi-Jalal et al., 2004)
 (Bozorg Haddad & Marino; 2008)

Lingo

(Moradi-Jalal et al., 2003)

11

P_c

P_m

NLP-GA

()

()

NLP-GA

/ / / / / / / / / ()

NLP-GA

/ / / / / ()

/ / / /

GA

()

HBMO

(D-HBMO)

(S-HBMO)

()

/

NLP-GA S-HBMO D-HBMO LM

GA

()

NLP- HBMO GA LM

()

NLP-GA HBMO GA LM

<i>NLP-GA</i>	<i>S HBMO</i>	<i>D HBMO</i>	<i>GA</i>	<i>LM</i>
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<i>NLP-GA</i>	<i>S HBMO</i>	<i>D HBMO</i>	<i>GA</i>	<i>LM</i>
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/

()

LM

D HBMO

/ NLP-GA

GA

HBMO

D HBMO

NLP-GA

D

()

GA

D HBMO

NLP-GA

NLP-GA

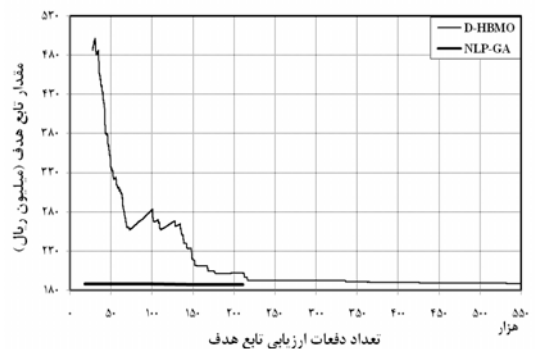
GA

NLP

NLP-GA

GA

GA



D HBMO S HBMO GA LM

NLP-

GA

D HBMO

...	:		
$Q_{i,j}$	()
ATC			
CRF			
E_T	()
Q_{maxi}	() i
$e_{i,j}$		j	i
TC	()
$H_{i,j}$	() j	i
Δt			
ρ			
n			
g			
		i	a_i, b_i, c_i
		i	H_{maxi}
			() i
			C_E (
)
			H_{mini}
			() i
			C_i
			() i
			$(Q_N)_j$
			() j
			C'_i ()
			i
		j	i

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