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MATLAB A

F505 A 1008-9659 2024 01-0033-12

VRP *VRP*

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NSGA Ⅱ

TOPSIS

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BAS-AGA

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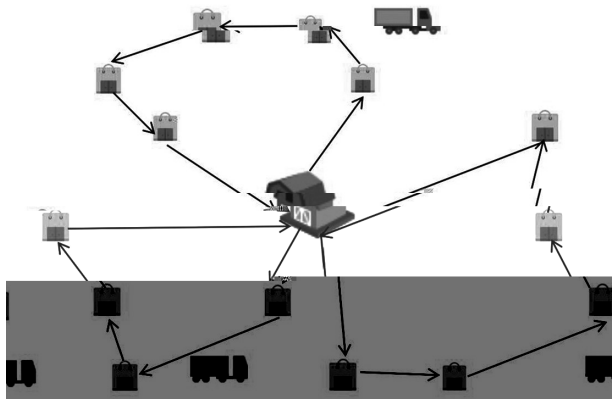

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L_0

M m

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V_0

C

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p .

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P_c .

λ

f_m .

f .

$$E\ x\quad \frac{e\quad e}{Q}x\quad e$$

e_0 e_1 Q

m x

$$C'\ \sum_{m}^{M}\sum_{i\ j}^{n} P_c\rho E\ Q_{ij}\ d_{ij}x_{x\ j}^{m}$$

$$C''\ \sum_{m}^{M}\sum_{i\ j}^{n} P_c\lambda Q_{ij}d_{ij}x_{i\ j}^{m}$$

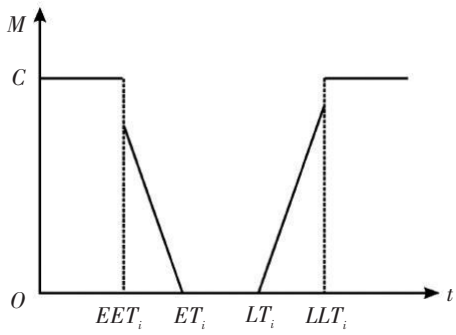
P_c ρ λ Q_{ij}

i j

C C' C''

1.4.5

ET_i LT_i i EET_i LLT_i i



2

$$\phi\ \ t_i\quad \left\{\begin{array}{l} M \\ \quad ET_i\quad T_{ik}\ ,\quad EET\quad T\quad ET_i \\ \quad T_{ik}\quad LT_i\qquad LT_i\quad T_{ik}\quad LLT_i \\ \qquad\qquad\qquad\ ET_i\quad T_{ik}\quad LT_i \end{array}\right\}$$

$$C\quad f_m^{M}\ G_m\ \sum_{m}^{M}\sum_{i\ j}^{n} f\ d_{ij}x_{i\ j}^{m}\quad C\ \sum_{m}^{M}\sum_{i\ j}^{n} pa_i\quad e^{\varepsilon\ t_i^m\ t^m}\ y_i^m\quad +\ \sum_{m}^{M}\sum_{i\ j}^{n} pa_i\quad e^{\varepsilon\ t}\ y_i^m$$

$$\sum_{m}^{M}\sum_{i\ j}^{n} P_c\rho E\ Q_{ij}\ d_{ij}x_{x\ j}^{m}+\sum_{m}^{M}\sum_{i\ j}^{n} P_c\lambda Q_{ij}d_{ij}x_{i\ j}^{m}+\sum_{i}^{n}\phi_i\ t_i$$

$$\sum_{m}^{M}\sum_{i\ j}^{n} mx_{ij}^{m}\quad M\ \ i\ j\qquad n\ \ m\qquad M$$

$$\sum_{j}^{n} x_{ij}^{m}\qquad \sum_{i}^{} x_{ji}^{m}\qquad i\ j\qquad n\ \ m\qquad M$$

$M \quad n$

$Q_i x_{ij}^m \quad Q_m, \ i, j \qquad \cdots n \quad m \qquad \cdots M$

$m \quad i, j$

$M \quad n$

$x_{ij}^m \qquad , i, j \qquad \cdots n \quad m \qquad \cdots M$

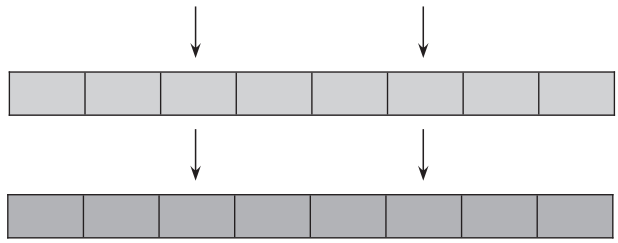
$m \quad i, j$

$x_j^m \quad \{ \quad \} \ j \qquad \cdots n \quad m \qquad \cdots M$

$x_{i, j}^m \quad \{ \quad \}, \ i \ j \qquad \cdots n \quad m \qquad \cdots M$

$ET_i \quad t_i \quad LT_i$

8 U



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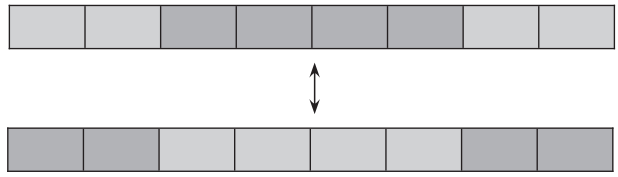

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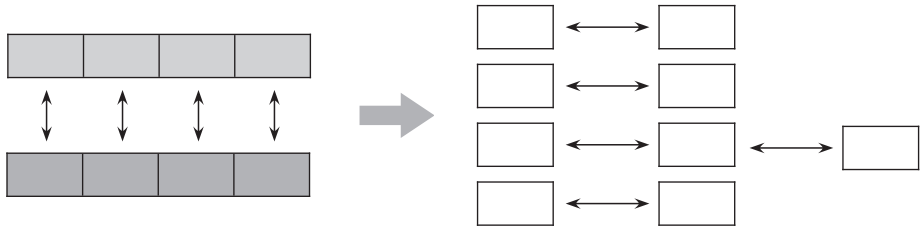

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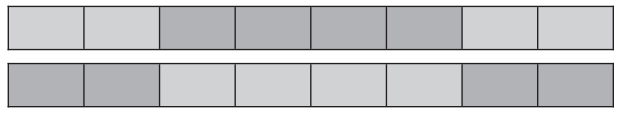

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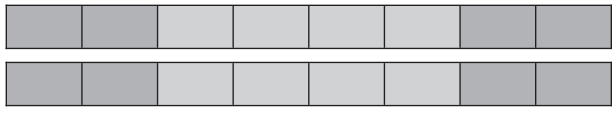
2.1.4



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2.1.5

$$E \quad \frac{}{N}_{i}^{n} \left| f_i \quad f_{avg} \right|$$

f_i i f_{avg} E

2.1.6

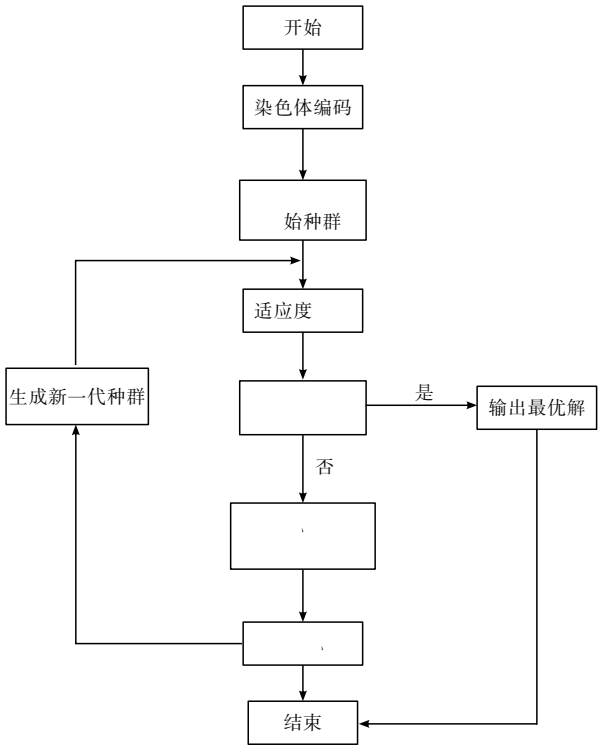
$$P_c \quad \begin{cases} P_c & \dfrac{(P_c \quad P_c)\ (f \quad f')}{f \quad \bar{f}} \quad f' \quad \bar{f} \\ P_c & f' \quad \bar{f} \end{cases}$$

$$P_m \quad \begin{cases} P_m & \dfrac{(P_m \quad P_m)\ (f \quad f)}{f \quad \bar{f}} \quad f \quad \bar{f} \\ P_m & f \quad \bar{f} \end{cases}$$

f' f P_c P_{c2}

P_m P_m P_c P_c P_m P_m

P_c = P_c = P_m = P_m =



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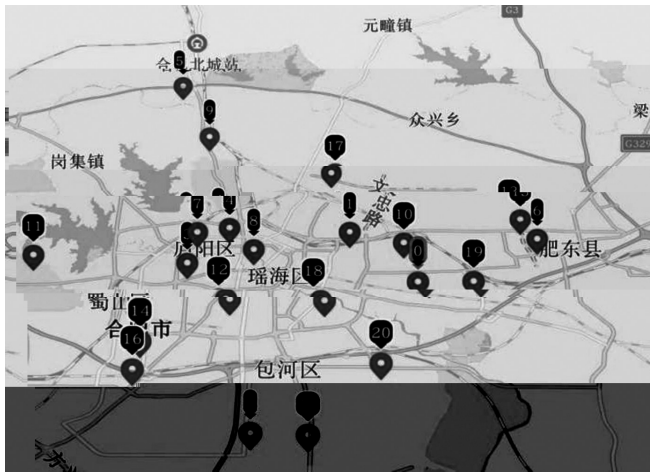
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瑶海区
包河区
肥东县
合肥市

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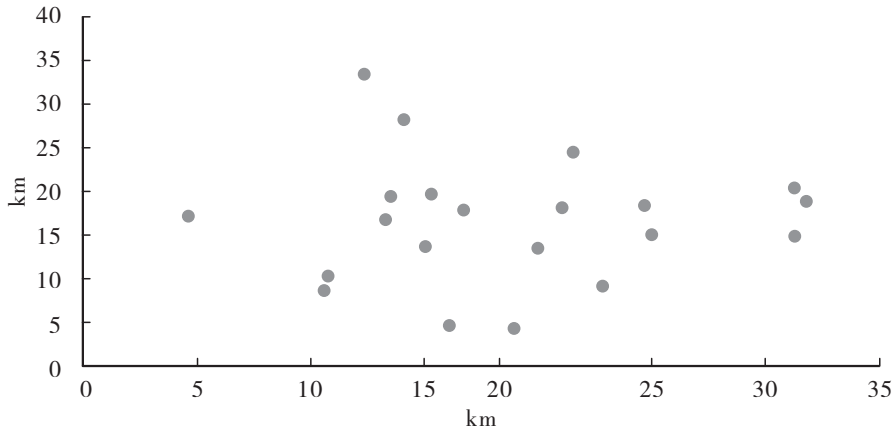
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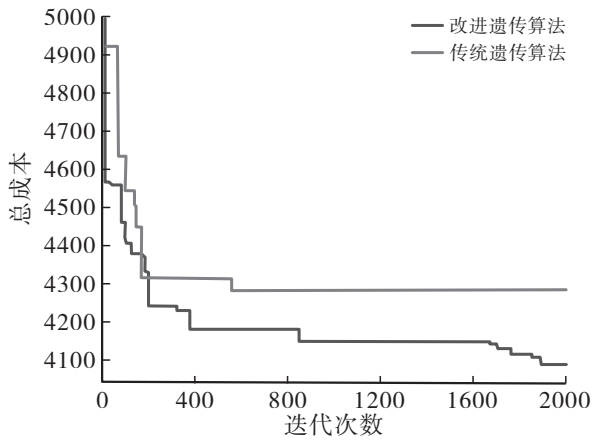
3.2.1

VRP *th Gen*

NP *MAXGEN*

GGPA



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11 . BAS-AGA — J . 2023 23 12 5251-5259.
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13 CHEN J LIAO W YU C. Route Optimization for Cold Chain Logistics of Front Warehouses based on Traffic Congestion and Carbon Emission J . Computers & Industrial Engineering 2021 161 107663.
14 . J . 2023 26 03 88-94 121.
15 . J . 2023 38 01 17-25 30.
16 . J . 2023
60 02 70-80.

Low Carbon Cold Chain Logistics Research based on Improved Genetic Algorithm

School of Economics and Management Anhui University of Science and Technology
Huainan Anhui 232000 China

In order to achieve the goal of minimum transport cost under the consideration of carbon emission the greedy algorithm is introduced to construct the initialised population and the elite retention strategy and the immigration strategy are introduced as a way to improve the genetic algorithm's vulnerability to premature maturity. The feasibility of the algorithm is verified by the MATLAB software for Enterprise A which shows that the improved algorithm is not prone to premature maturity and verifies that the carbon emission cost is an important consideration in path selection.