

Task 1 Factor Identification

Correlation + Clustering + PCA

Indicator System

Min-Max Normalize

Correlation & Cluster

PCA Loadings

Structure \mathcal{E}

Task 2 Evaluation (2025)

Entropy Weight + TOPSIS (+GRA)

Entropy Weighting

Weighted Matrix

TOPSIS Score C_i

GRA γ_i

Ranking (2025)

Task 3 Trend Forecast

GM(1,1) + Backtesting

GM(1,1) Forecast

Fallback Trend

Backtest MAPE

Predict

$\hat{x}_{i,j,t}$

Dynamic TOPSIS $C_{i,t}$

Data Set → Data Preprocessing

Task 4 Investment Optimisation

Nonlinear Program (SLSQP)

Decision I

Response $\Delta x_j(I_j)$

Constraints (Budget+Synergy)

SLSQP Solver

Optimal I^*