

182 Study on Visual Comprehensive Evaluation System of Distribution Grid Resilience Based on Deep Auto-encoder

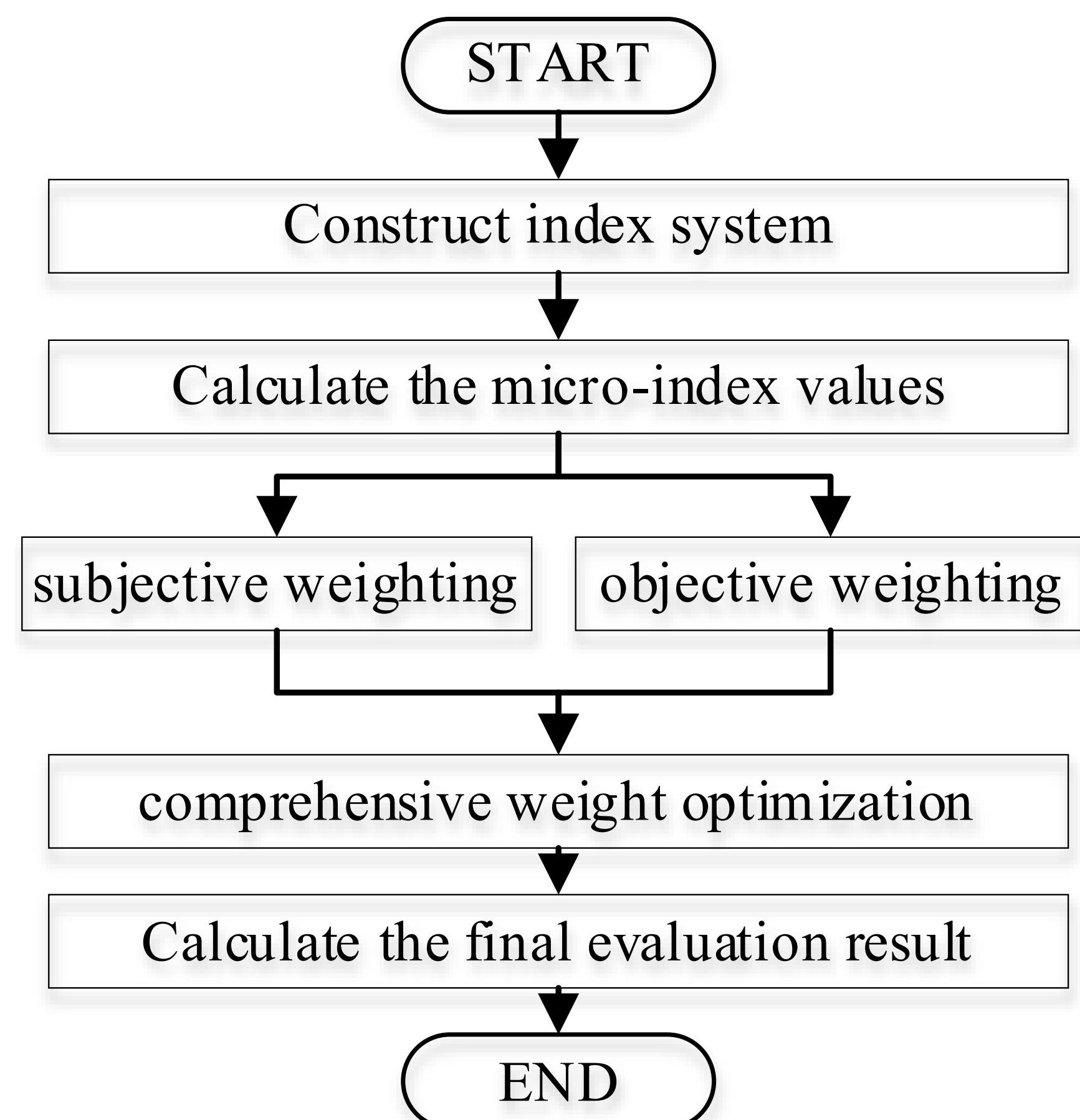
Jian, ZHOU Xinchu, WEI Shanshan, SHI
 State Grid Shanghai Municipal Electric Power Company, China

Introduction

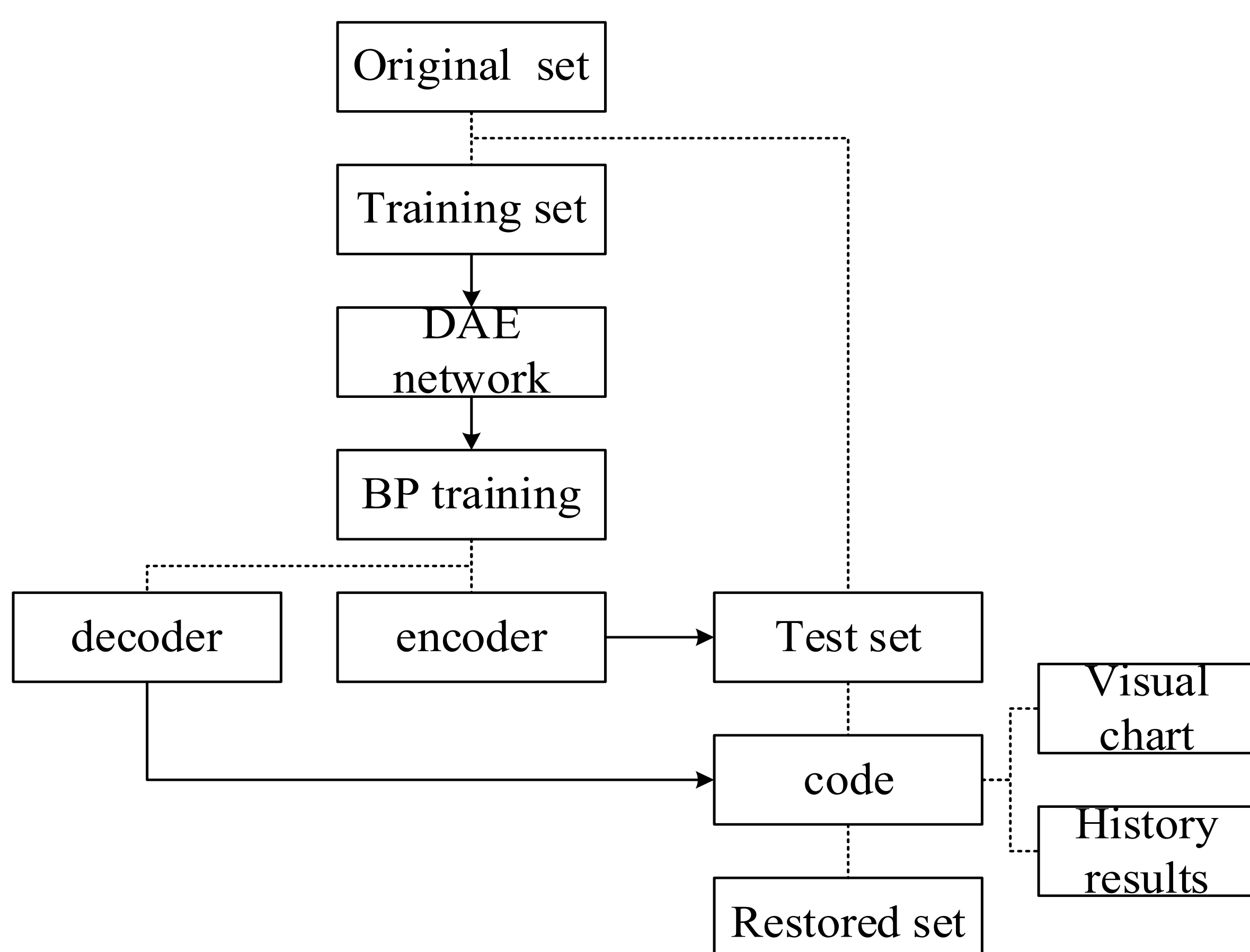
This paper constructed a macro-micro combined evaluation index system of distribution grid resilience. Based on DAE, this paper presented a dimension reduction method of evaluation model. While reducing the redundancy of index system, the result could be clearly visualized.

DAE based evaluation system dimension reduction and visualization method

The comprehensive evaluation process of distribution grid resilience:

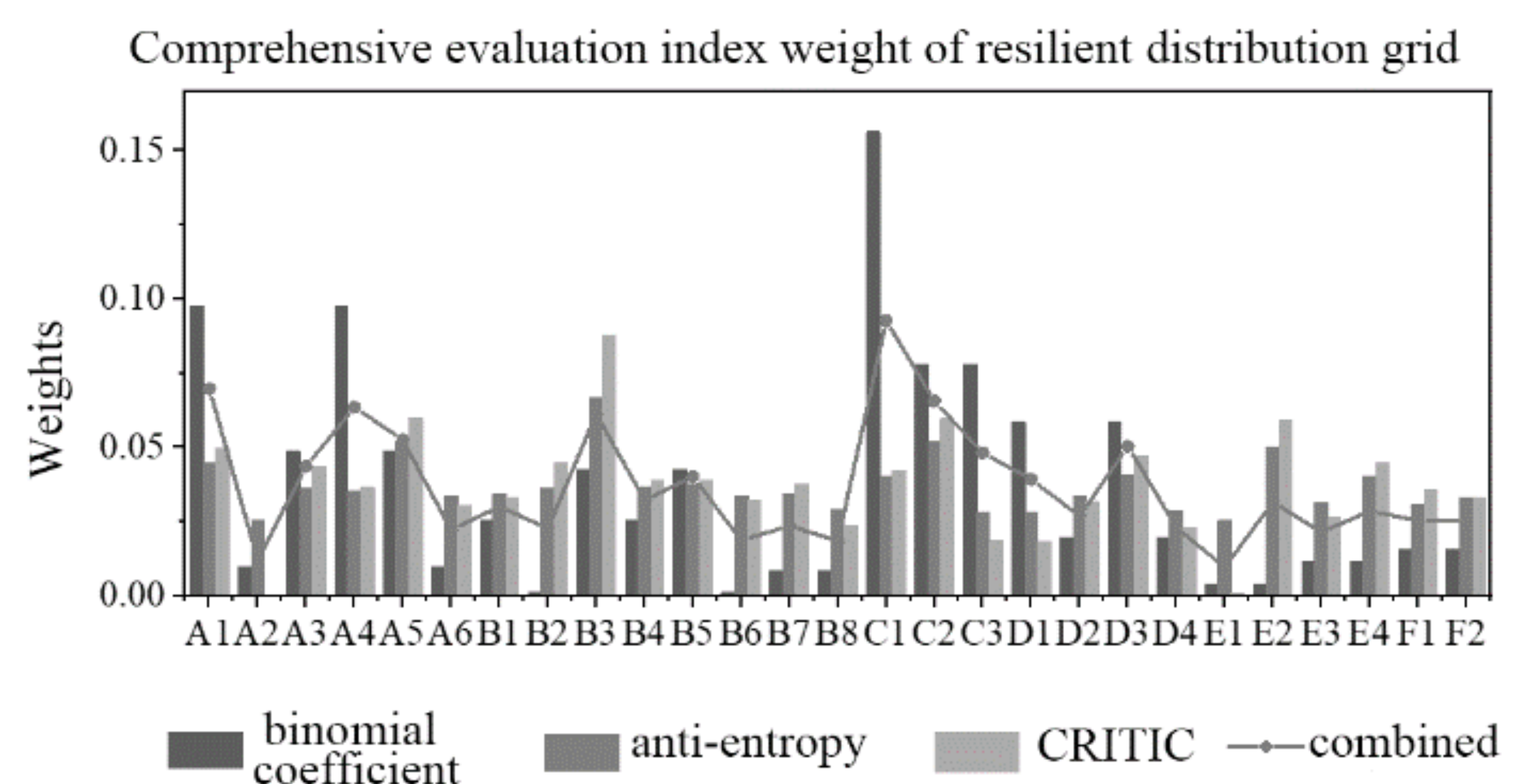


The DAE-based dimension reduction process of evaluation system:



Results

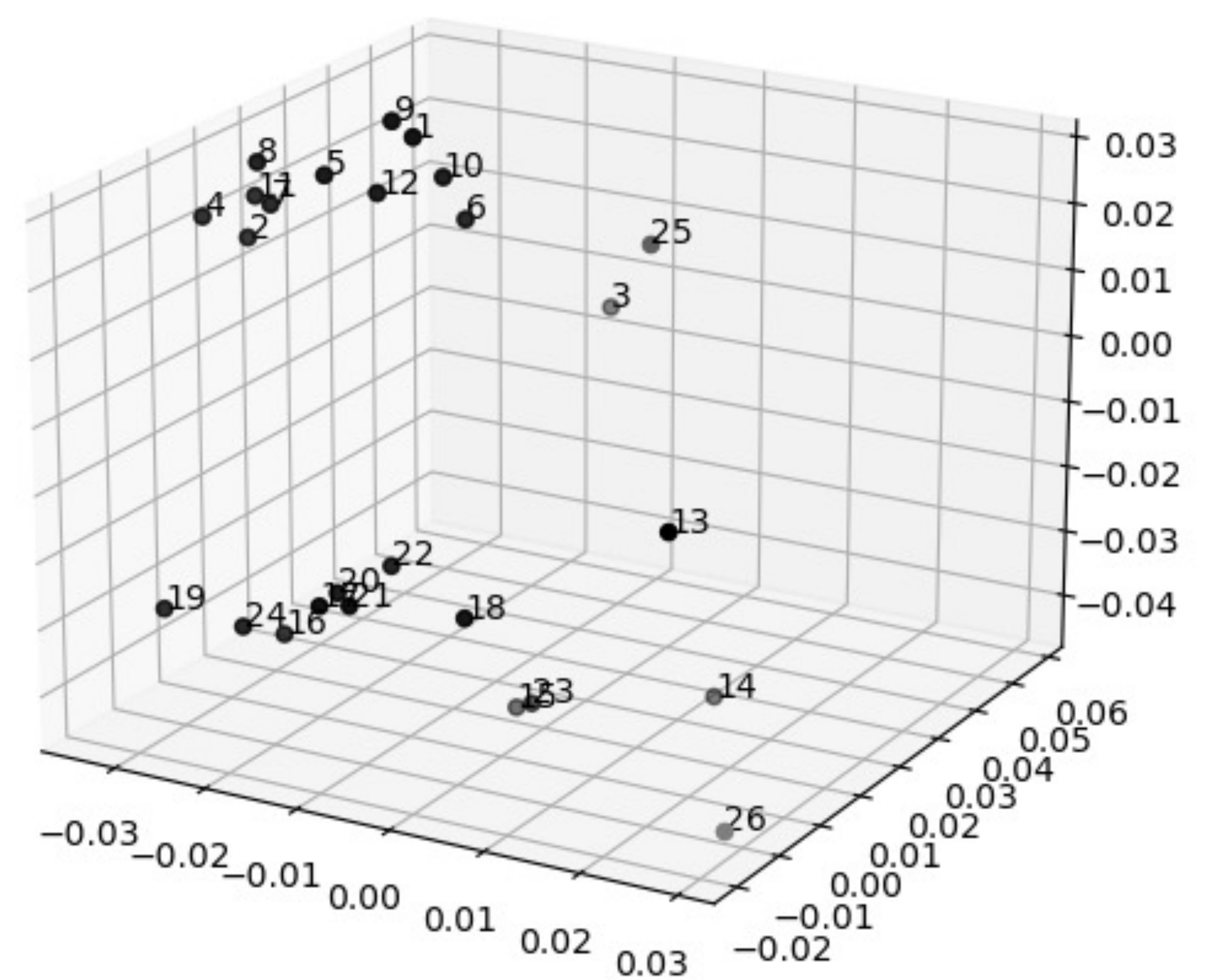
Comprehensive evaluation index weight of resilient distribution grid:



Evaluation results of urban and rural resilient distribution grid:

region	binomial coefficient	Anti-entropy	CRITIC	combined
urban	0.8506	0.7980	0.7809	0.8173
rural	0.6474	0.5944	0.5822	0.6151

Visual result of the evaluation:



Conclusions of your work

The comprehensive evaluation system can evaluate the operation effect of distribution grid under the resilience demand. The proposed DAE based visualization method can reduce the data scale of evaluation results while retaining the characteristics of original data.