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现在是重构后的预测性能更好了

但是群智能算法优化不了了，重构后的预测性能太好了---RF重构后R2=0.98---怎么优化啊。而且RF的参数很难调，都是整数，不是浮点数，只能调整没涉及的参数

=》人为再降低一些重构模型=》学习器就调整几个吧

RF未重构

regressor=RandomForestRegressor(n\_estimators=10,

max\_depth=9,

~~max\_features='auto',~~

~~min\_samples\_leaf=1,~~

~~min\_samples\_split=2,~~

random\_state=42)

#--42,42--- 数据集加入新的重构特征---'n\_estimators': [10,30,50,70,100]

'''

MAE\_train: 0.0007057015714285718

MSE\_train: 1.1103403228200525e-06

RMSE\_train: 0.0010537268729704356

MAPE\_train: 0.5455101028225932

r2\_score\_train: 0.9788890288783126

EV\_train: 0.9790041847552194

-------------------

MAE\_test: 0.0012510044047619043

MSE\_test: 4.39127119730496e-06

RMSE\_test: 0.0020955360167043083

MAPE\_test: 0.8436127522954732

r2\_score\_test: 0.921220631511189

EV\_test: 0.9213853032582059

-------------------

'''

RF重构

regressor=RandomForestRegressor(n\_estimators=10,

max\_depth=9,

~~max\_features='auto',~~

~~min\_samples\_leaf=1,~~

~~min\_samples\_split=2,~~

random\_state=42)

#--42,42--- 数据集加入新的重构特征---'n\_estimators': [10,30,50,70,100]

'''

MAE\_train: 0.0007094488988095241

MSE\_train: 1.0517293984472725e-06

RMSE\_train: 0.001025538589448136

MAPE\_train: 0.7744706273865525

r2\_score\_train: 0.9800034021082307

EV\_train: 0.980306992989975

-------------------

MAE\_test: 0.0014365156190476185

MSE\_test: 3.903858083046789e-06

RMSE\_test: 0.0019758183325009385

MAPE\_test: 1.3928110052324845

r2\_score\_test: 0.929964818697348

EV\_test: 0.9382987625845607

-------------------

'''

DT未重构

~~regressor=DecisionTreeRegressor(~~

~~max\_depth=5,~~

~~max\_features='auto',~~

~~min\_samples\_leaf=2,~~

~~min\_samples\_split=2,~~

~~random\_state=100)~~

~~#---42,100--- 数据集加入新的重构特征----'max\_depth': [1,3,5,7,9,11,13,15,17,19]~~

~~'''~~

~~MAE\_train: 0.0011075702197802198~~

~~MSE\_train: 3.4468405712707876e-06~~

~~RMSE\_train: 0.0018565668776725464~~

~~MAPE\_train: 0.220342055877831~~

~~r2\_score\_train: 0.9344650011661779~~

~~EV\_train: 0.9344650011661779~~

~~-------------------~~

~~MAE\_test: 0.001248601886446886~~

~~MSE\_test: 4.368805970458772e-06~~

~~RMSE\_test: 0.0020901688856307214~~

~~MAPE\_test: 0.2280053873432156~~

~~r2\_score\_test: 0.921623657492592~~

~~EV\_test: 0.921895630842903~~

~~----------------------------------~~

regressor=DecisionTreeRegressor(

max\_depth=5,

max\_features='auto',

~~min\_samples\_leaf=1,~~

~~min\_samples\_split=2,~~

random\_state=100)

MAE\_train: 0.0007130190293040293

MSE\_train: 2.6646716090088827e-06

RMSE\_train: 0.0016323821884010137

MAPE\_train: 0.1204065712417194

r2\_score\_train: 0.9493364293537565

EV\_train: 0.9493364293537565

-------------------

MAE\_test: 0.0015229352197802194

MSE\_test: 6.459253240300042e-06

RMSE\_test: 0.002541506096844948

MAPE\_test: 0.2348983653828422

r2\_score\_test: 0.8841210509857734

EV\_test: 0.8915973907538713

----------------------------------

DT重构

regressor=DecisionTreeRegressor(

max\_depth=7,

max\_features=5,

min\_samples\_leaf=1,

min\_samples\_split=2,

random\_state=100)

#---42,100--- 数据集加入新的重构特征----'max\_depth': [1,3,5,7,9,11,13,15,17,19]

'''

MAE\_train: 0.000327202380952381

MSE\_train: 8.928842261904762e-07

RMSE\_train: 0.0009449255135673268

MAPE\_train: 0.05139058260321556

r2\_score\_train: 0.9830235354632147

EV\_train: 0.9830235354632147

-------------------

MAE\_test: 0.001604552142857143

MSE\_test: 4.1096514888738085e-06

RMSE\_test: 0.0020272275375186203

MAPE\_test: 0.6775957750873035

r2\_score\_test: 0.9262728867209846

EV\_test: 0.9275054811131334

----------------------------------

'''

MLP未重构

#---42,90--------'alpha':[0.0001,0.0005,0.001,0.005,0.01,0.05,0.1],

'''

{'activation': 'relu', 'alpha': 0.005, 'hidden\_layer\_sizes': 7, 'max\_iter': 101}

0.6626654368238916

MAE\_train: 0.0032673976286615135

MSE\_train: 1.7277057172244797e-05

RMSE\_train: 0.004156567955927678

MAPE\_train: 3.321857651166017

r2\_score\_train: 0.671510213999396

EV\_train: 0.6715822301103428

-------------------

MAE\_test: 0.003704064483912855

MSE\_test: 2.1695729654578428e-05

RMSE\_test: 0.004657867500753797

MAPE\_test: 3.0705233405584016

r2\_score\_test: 0.61077879176749

EV\_test: 0.6108743507930944

-------------------

'''

MLP重构

#---42,90---数据集加入新的重构特征

-----'alpha':[0.0001,0.0005,0.001,0.005,0.01,0.05,0.1],

'''

{'activation': 'tanh', 'alpha': 0.001, 'hidden\_layer\_sizes': 6, 'max\_iter': 51}

0.6961603545220384

MAE\_train: 0.002400368471547203

MSE\_train: 9.57541254866315e-06

RMSE\_train: 0.0030944163502449294

MAPE\_train: 7.833874907076711

r2\_score\_train: 0.8179420726794311

EV\_train: 0.8179577271639531

-------------------

MAE\_test: 0.002417320793805746

MSE\_test: 9.847258297846715e-06

RMSE\_test: 0.003138034145423965

MAPE\_test: 1.4576851327713223

r2\_score\_test: 0.8233402686386865

EV\_test: 0.8271528368600944

-------------------

'''

SVR未重构

best\_params: {'C': 0.1, 'epsilon': 0.01, 'gamma': 0.2, 'kernel': 'sigmoid'}

best\_model: SVR(C=0.1, epsilon=0.01, gamma=0.2, kernel='sigmoid')

MAE\_train: 0.006339188644860127

MSE\_train: 4.9098675528302475e-05

RMSE\_train: 0.007007044707171667

MAPE\_train: 18.920479324489754

r2\_score\_train: 0.044451044747127355

EV\_train: 0.4739499016947528

-------------------

MAE\_test: 0.0049613413629854405

MSE\_test: 3.056518544523787e-05

RMSE\_test: 0.005528578971601823

MAPE\_test: 13.923756193281024

r2\_score\_test: 0.5108161365476989

EV\_test: 0.639900446973018

-------------------

SVR重构

best\_params: {'C': 0.2, 'epsilon': 0.01, 'gamma': 0.1, 'kernel': 'sigmoid'}

best\_model: SVR(C=0.2, epsilon=0.01, gamma=0.1, kernel='sigmoid')

MAE\_train: 0.005952841253088604

MSE\_train: 4.4351418785679606e-05

RMSE\_train: 0.00665968608762302

MAPE\_train: 17.740348020730305

r2\_score\_train: 0.13684124004100173

EV\_train: 0.48344628264730405

----------------------------------

MAE\_test: 0.0045024371645981335

MSE\_test: 2.6846542486163057e-05

RMSE\_test: 0.00518136492501378

MAPE\_test: 13.098013540333785

r2\_score\_test: 0.5703315657205107

EV\_test: 0.6631208226747529

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