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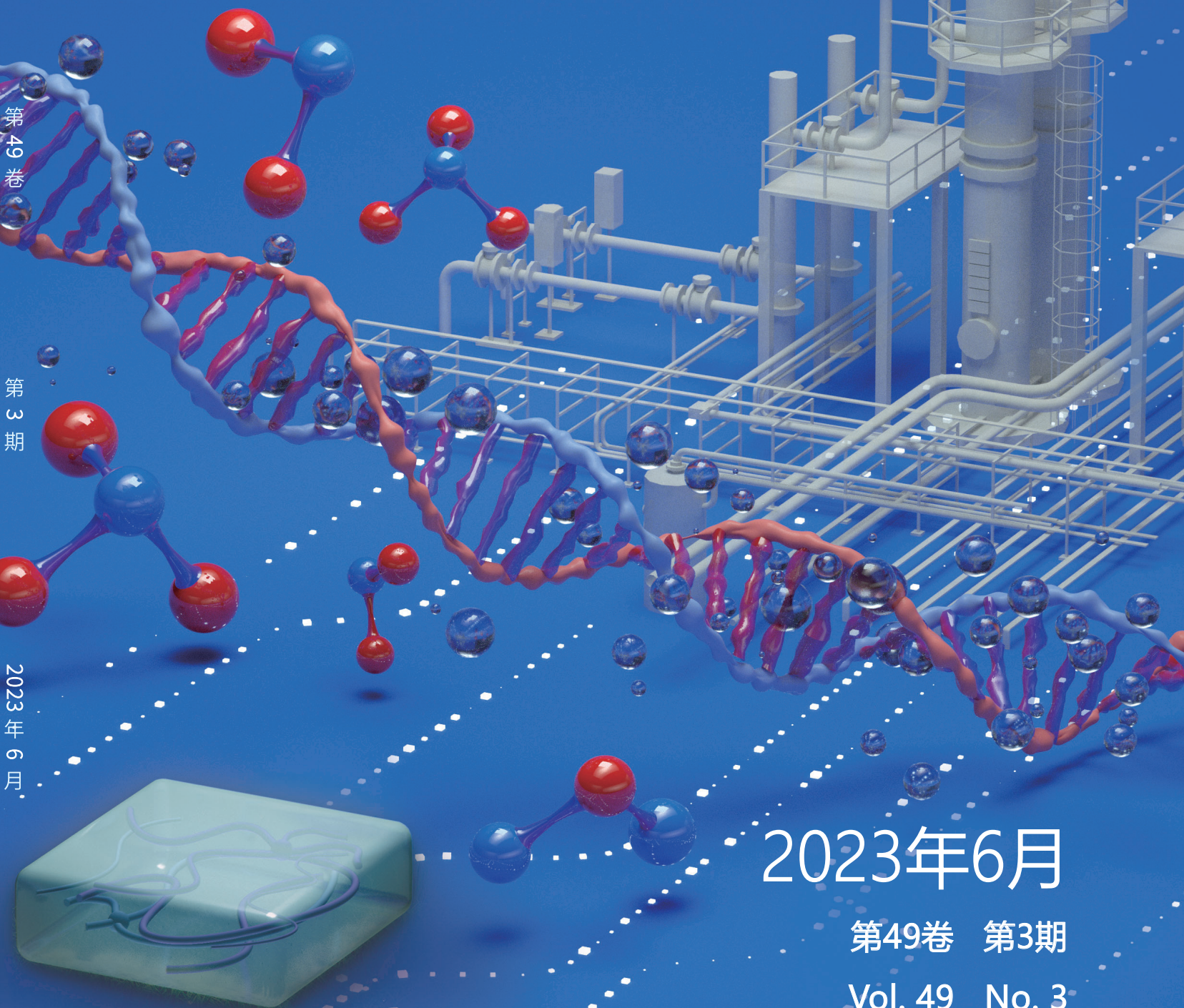


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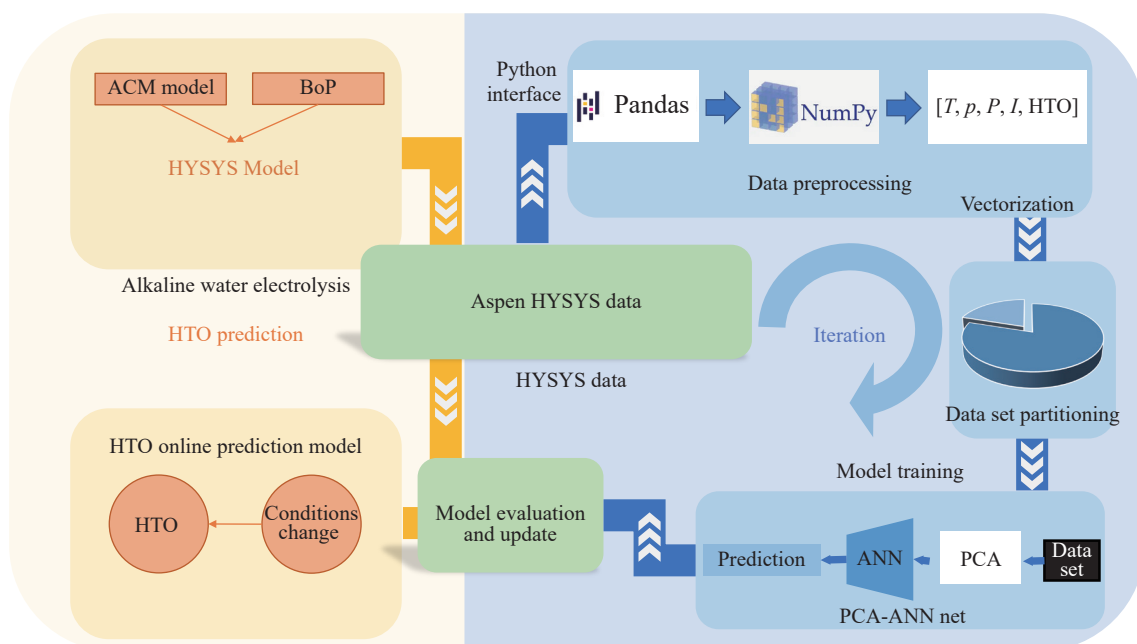
Papers

• Special Column for Carbon Neutral Technology •

Gas Purity Prediction of Alkaline Water Electrolysis System Based on PCA-ANN

HUANG Chao, LI Hang, ZHOU Li, BI Kexin, DAI Yiyang, LI Wenyong

Journal of East China University of Science and Technology, 2023, 49(3): 305-314.



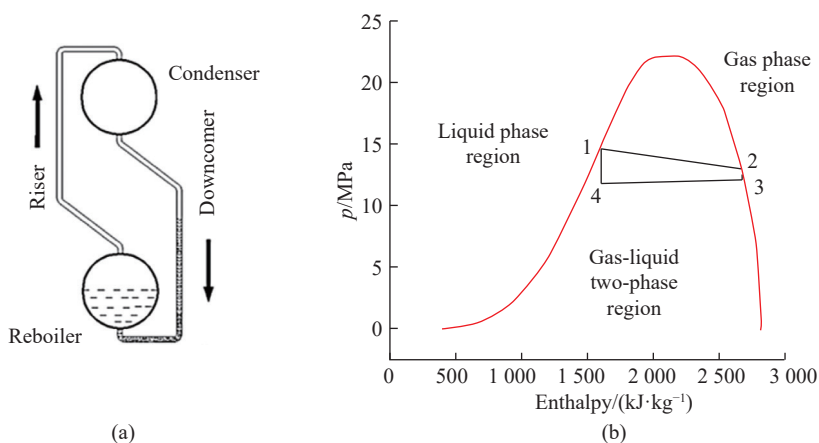
Overall framework of gas purity prediction model for alkaline water electrolysis system is based on PCA-ANN. HYSYS and Python interface are used for integrated training to realize online prediction and model iteration.

Thermodynamic Characteristics of Phase Change Heat Exchange System for Aromatics Low Temperature Heat Recovery

WANG Zitao, WANG Yuanhua, NI Yantao

Journal of East China University of Science and Technology, 2023, 49(3): 315-325.

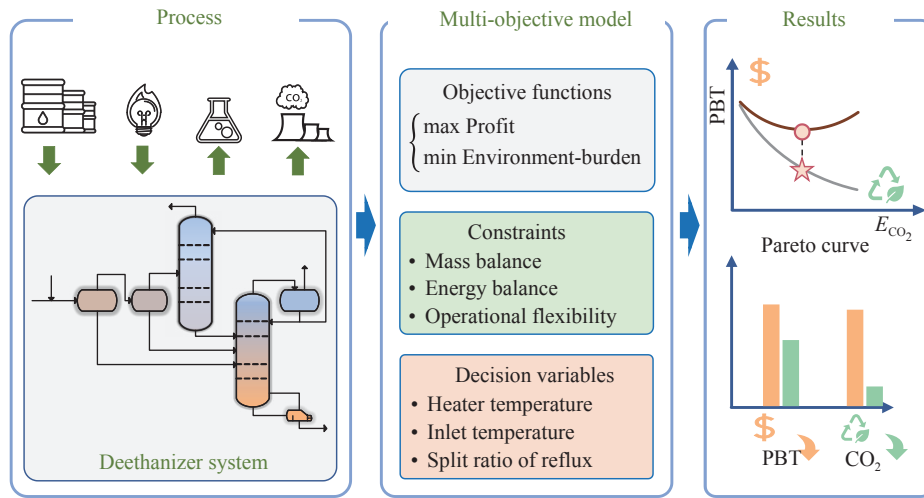
The intermediate working medium phase-change heat exchange is adopted to ensure the intrinsic safety of the low-temperature heat recovery process at the top of the aromatics complex unit. The intermediate working medium absorbs heat and vaporizes at the reboiler end, enters the condenser, and exchanges heat with the cold medium to achieve safe heat recovery.



Multi-Objective Economic-Environmental Optimization of High and Low Pressure Deethanizer System

ZHANG Zhu, HAN Xiao, YE Zhencheng

Journal of East China University of Science and Technology, 2023, 49(3): 326-334.

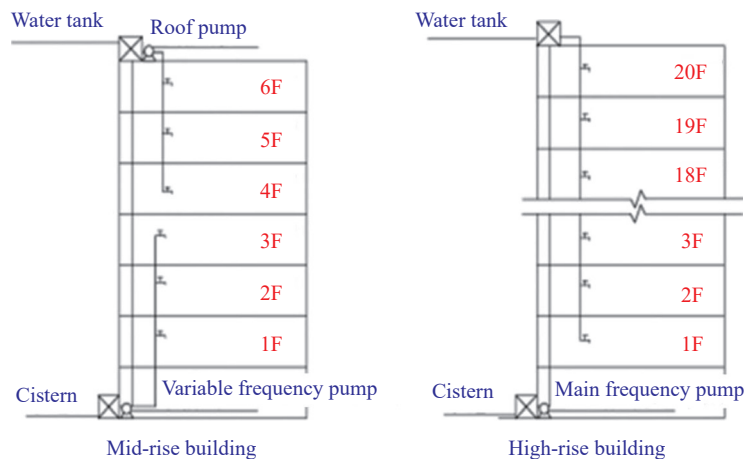


An integrated framework combining simulation and multi-objective optimization is proposed. An intelligent optimization algorithm is employed to solve the multi-objective optimization problem of the high and low pressure deethanizer process, and the TOPSIS method is used to obtain the optimal operating point on the Pareto front.

Energy Consumption of Secondary Water Supply System in Typical Old Residential Quarters in Shanghai under the Background of "Double Carbon"

FAN Jingjing

Journal of East China University of Science and Technology, 2023, 49(3): 335-340.

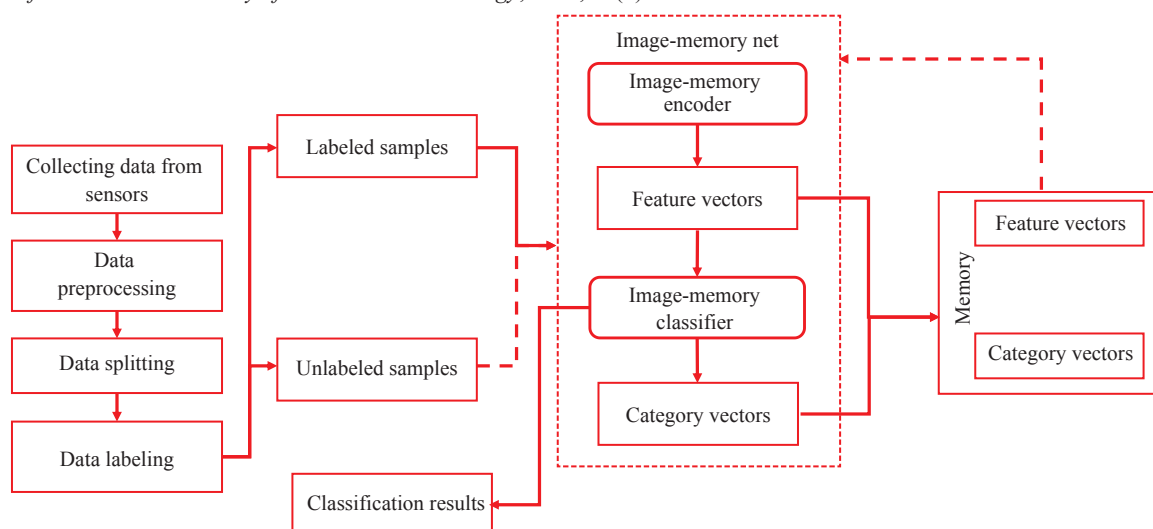


The energy consumption of secondary water supply operation under the two water supply modes is compared and analyzed, so as to provide technical reference for the later energy consumption reduction of water supply enterprises.

Image Memory Induced Anomaly Detection Algorithm for Atmospheric Pollutant Emission Time-Series Data

SONG Wenyu, ZHOU Haibo, WU Zongpei, LI Haiyuan, YUAN Yubo

Journal of East China University of Science and Technology, 2023, 49(3): 341-350.



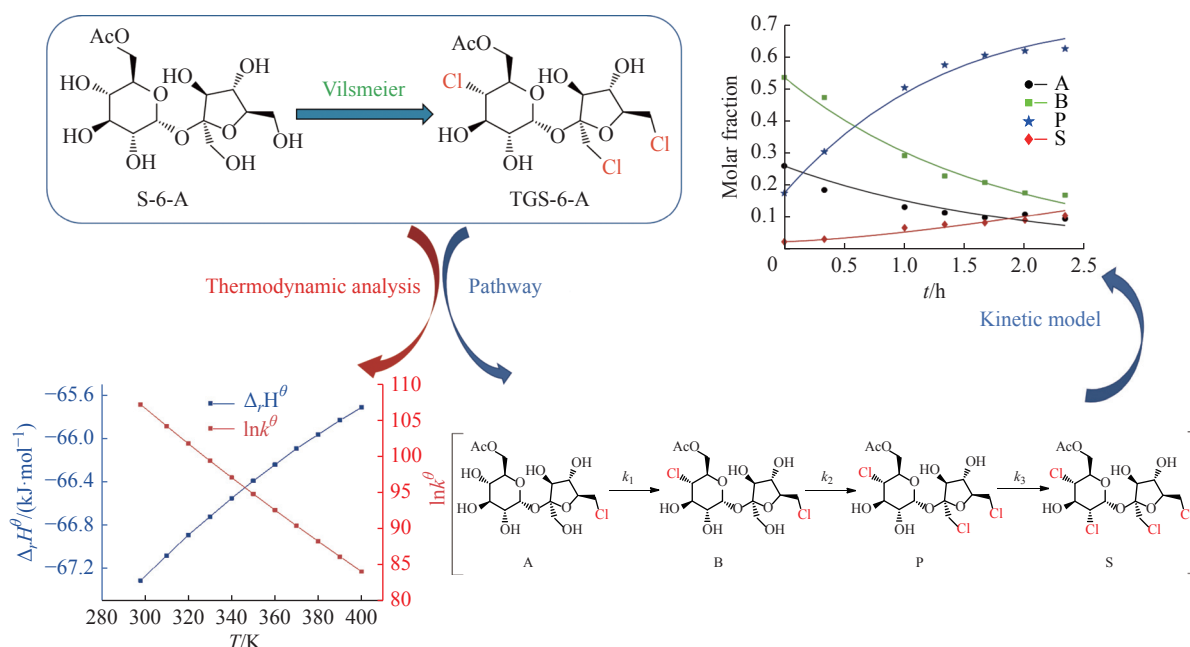
The labeled samples are used to train image-memory net which transforms time-series to feature vectors by image, and feature vectors are classified to category vectors by image-memory classifier. Then a memory mode is established with feature vectors and category vectors to classify the unlabel samples.

• Chemical Engineering •

Thermodynamic Analysis and Kinetic Study on the Sucrose-6-Acetate Chlorination Process

CAO Zhongya, SUN Weizhen, XU Zhimei, ZHAO Ling

Journal of East China University of Science and Technology, 2023, 49(3): 351-359.

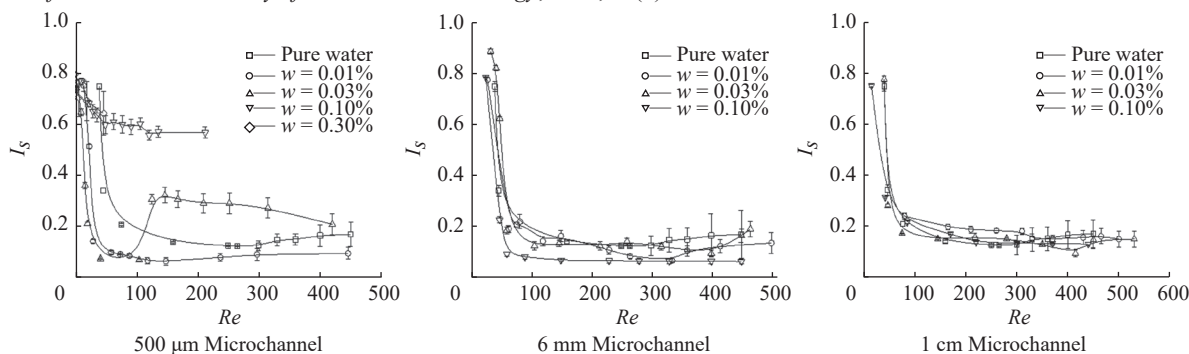


On the basis of thermodynamic analysis and reaction mechanism, a kinetic model of the chlorination reaction of S-6-A was established, and the kinetic parameters were obtained to guide the industrial process.

Mixing Mechanisms of Viscoelastic Impinging Flow in Cross-Shaped Channels

XU Xudong, ZHANG Wei, LI Weifeng, LIU Haifeng, WANG Fuchen

Journal of East China University of Science and Technology, 2023, 49(3): 360-367.

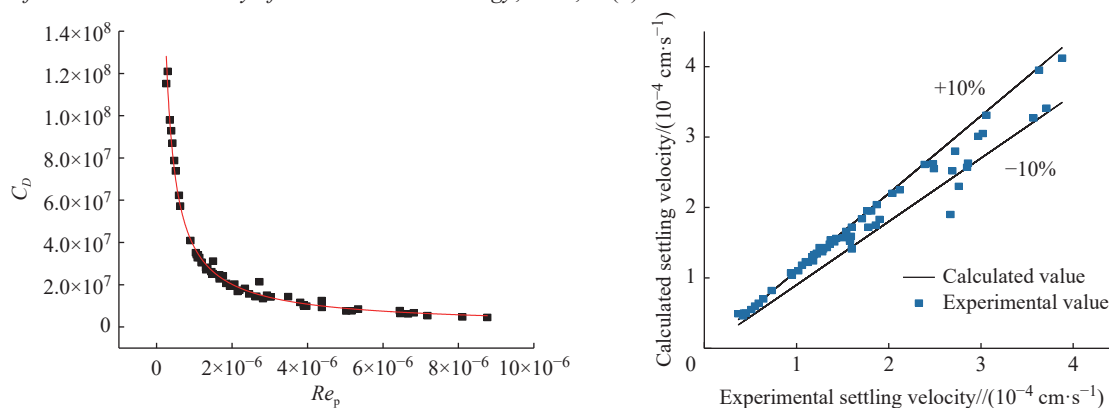


The planar laser-induced fluorescence technique (PLIF) is used to visualize viscoelastic fluid (polyethylene oxide solution) in cross-shaped channels, providing a new method to use inertial-elastic unsteady oscillation to regulate the flow regime, so as to strengthen the mixing effect in microchannels at low Reynolds number.

Settlement Characteristics and Settlement Velocity Model of Solid Particles in FCC Slurry

XIAO Zhimin, XIONG Ying, ZHOU Xiaolong

Journal of East China University of Science and Technology, 2023, 49(3): 368-375.



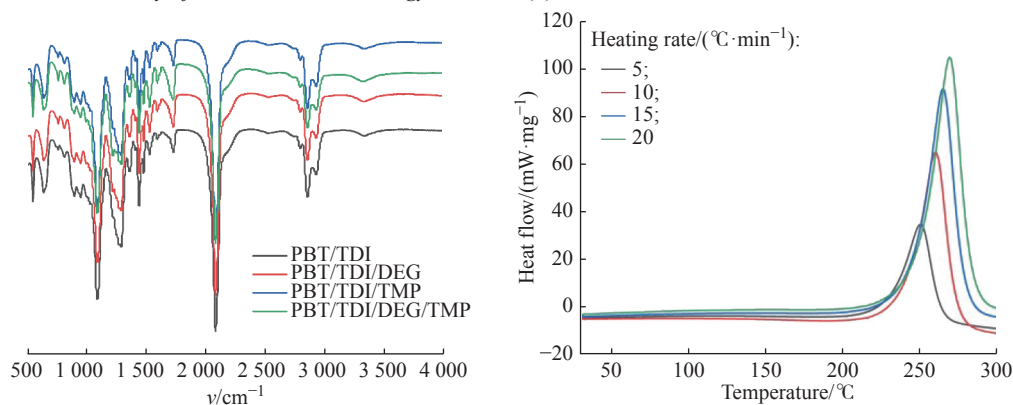
The relationship between drag coefficient and particle Reynolds number was analyzed to obtain a settling velocity model. The results showed that the error between experiment and model method was within 10%.

• Materials Science and Engineering •

Curing Systems of PBT Polyether Polyurethane with Different Active Hydrogen Components

SU Yaqi, WANG Weize, YANG Min, YANG Xixi, XUAN Fuzhen

Journal of East China University of Science and Technology, 2023, 49(3): 376-381.



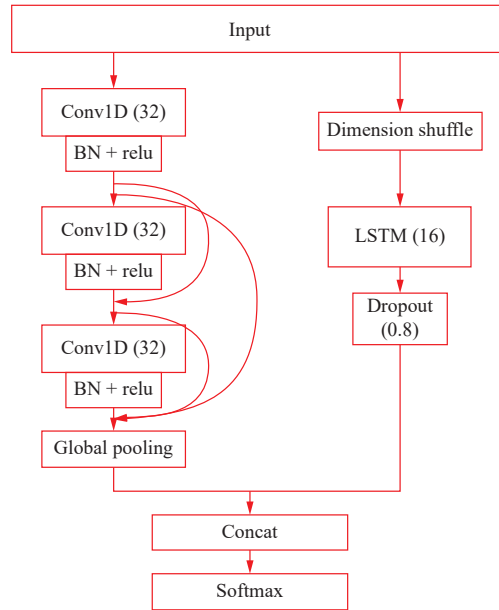
The results of Fourier Transform Infrared Spectroscopy (FT-IR) showed that the products of different curing systems had energetic azide polyurethane elastomer structure, and then the reaction kinetics and mechanical properties of different curing systems were studied.

Fault Detection of Chemical Process Based on Parallel LSTM-CNN

XIAO Feiyang, GU Xingsheng

Journal of East China University of Science and Technology, 2023, 49(3): 382-390.

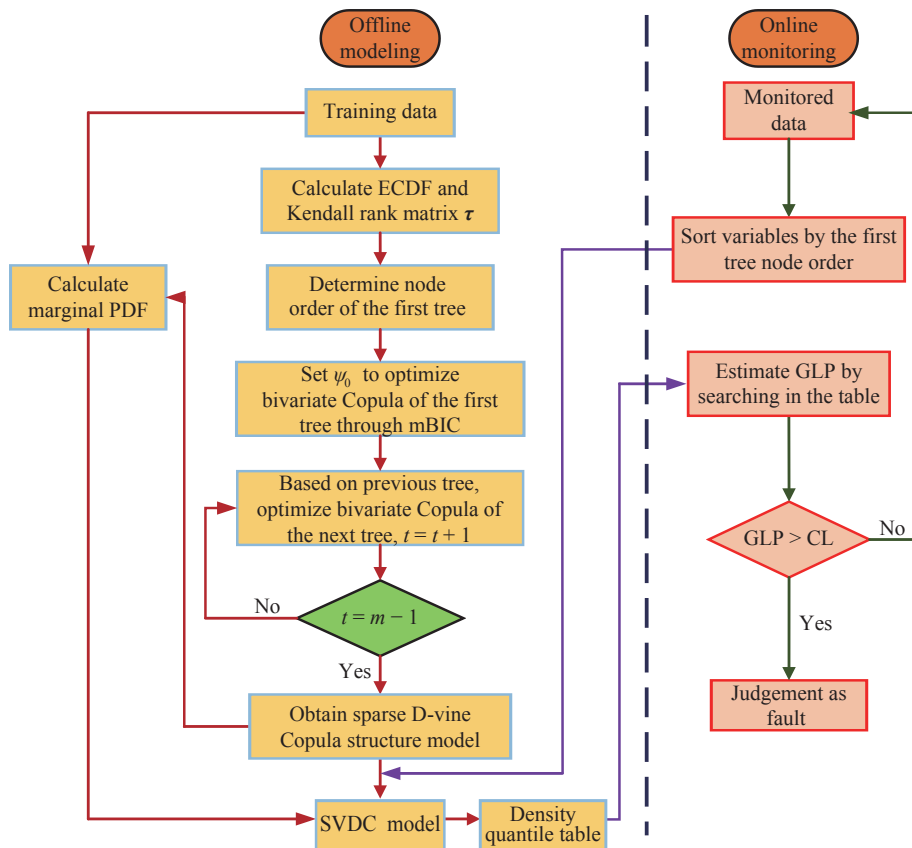
Aiming at the complexity of chemical process, a PLSTM-CNN model for fault detection in chemical production process is proposed. By combining the LSTM's ability to extract global features from time series data and the CNN model's ability to extract local features, this model can effectively reduce the loss of feature information and achieve a high fault detection rate.



Sparse D-vine Copula-Based Modeling Approach and Its Application in Process Monitoring

QIU Suiqing, LI Shaojun

Journal of East China University of Science and Technology, 2023, 49(3): 391-400.

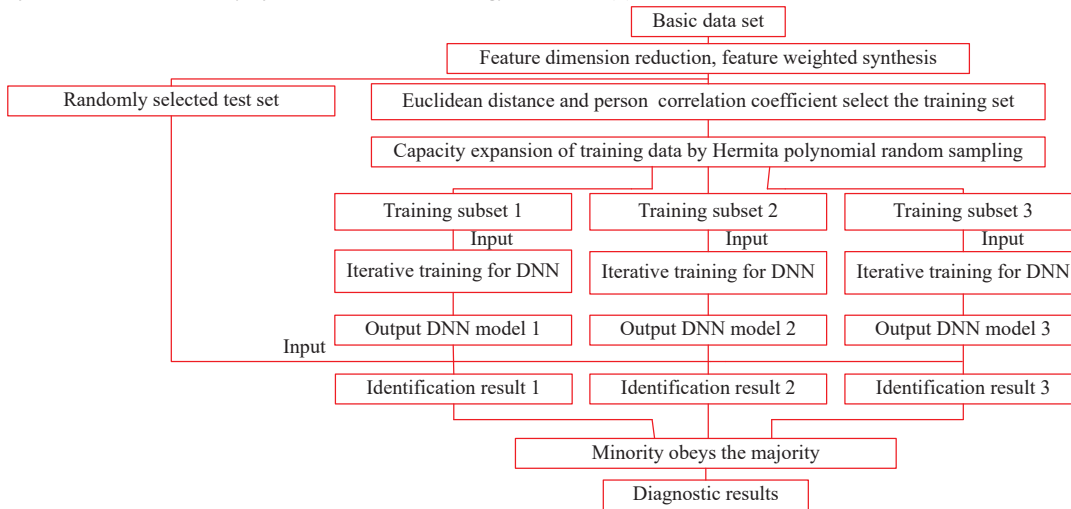


The proposed SDVC process monitoring scheme can overcome the nonlinear and non-Gaussian problem of high-dimensional data in industrial process, and achieve better fault monitoring performance and real-time performance than conventional D-vine Copula model.

Low Voltage Ride through Research on Distributed Deep Neural Network-Based Doubly Fed Induction Generator

ZHANG Zheyuan, GU Xingsheng

Journal of East China University of Science and Technology, 2023, 49(3): 401-409.

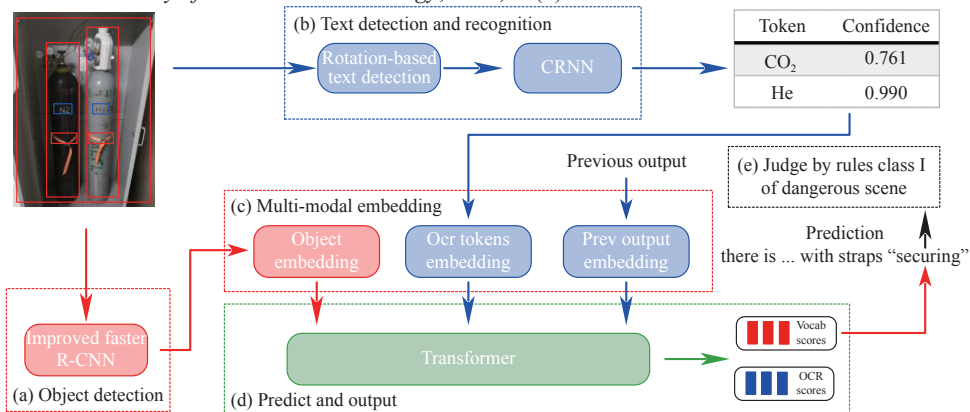


Firstly, the distributed depth neural network selects the fault characteristics through the mean and variance, then selects the training samples with the person coefficient and Euclidean distance, and finally predicts the fault through the principle of the minority obeying the majority.

Identification Method of Cylinder in Laboratory Dangerous Scene Based on Image Caption

FU Xujia, ZHOU Jiale, GU Zhen, YAN Bingyong, WANG Huifeng

Journal of East China University of Science and Technology, 2023, 49(3): 410-418.

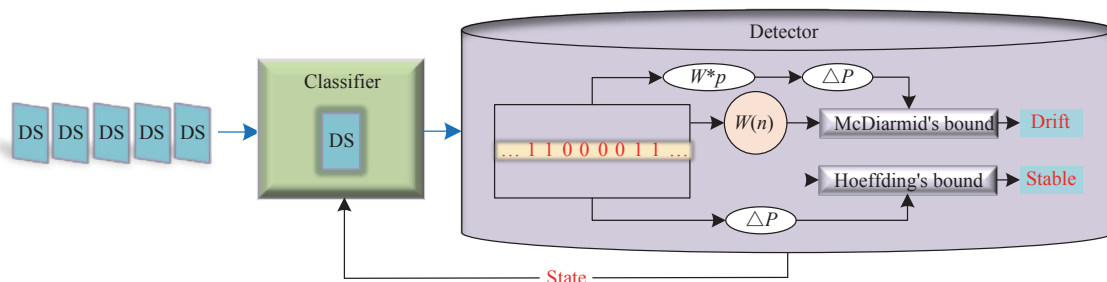


An image caption method combining multi-scale object detection and text detection recognition is proposed. It is shown from experimental results that the description statements generated by this method can effectively identify the dangerous substances and causes in the laboratory cylinder scene.

Adaptive Weighted Concept Drift Detection Method Based on McDiarmid Boundary

HU Yang, SUN Ziqiang

Journal of East China University of Science and Technology, 2022, 49(3): 419-428.

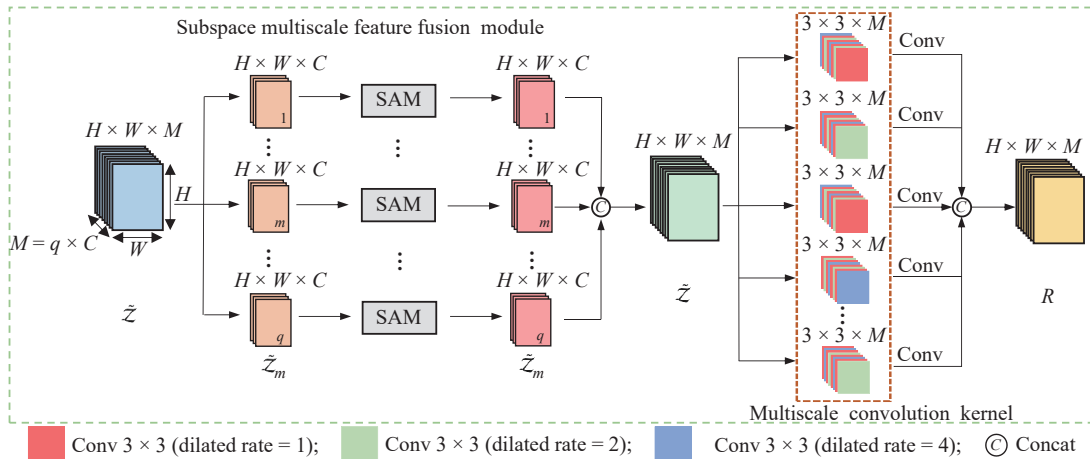


The detection methods of unweighted and weighted classification results differ in their ability to detect concept drift. When concept drift occurs, the unweighted method cannot detect the change in time, while the weighted method can quickly perceive the change and feed it back to the classifier.

Semantic Segmentation of Test Papers Based on Subspace Multi-Scale Feature Fusion

XIA Yuanxiang, LIU Yu, CHU Chengqian, WAN Yongjing, JIANG Cuiling

Journal of East China University of Science and Technology, 2023, 49(3): 429-438.



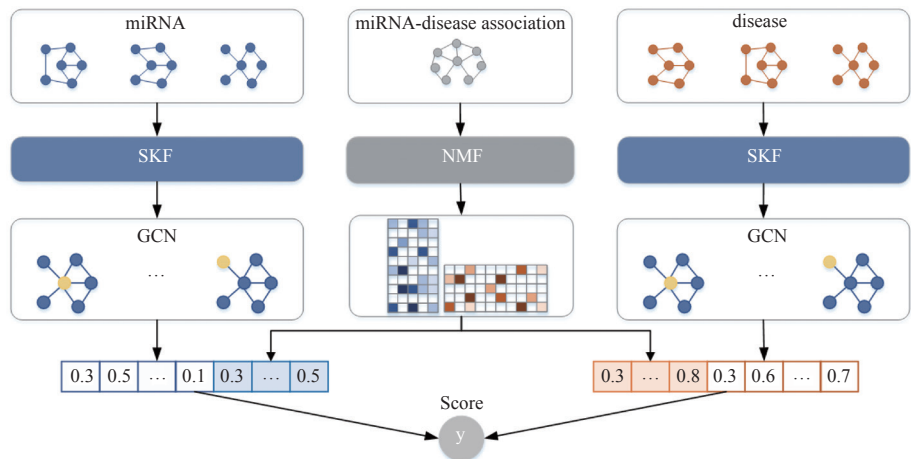
In the proposed subspace feature fusion module (SMFF), the sub-attention features of the sub-feature map in the spatial branch and the channel branches are calculated via the subspace attention module (SAM), and multi-scale convolution is performed on the output of SAM to enhance the correlation between sub-attention features.

A Hybrid Linear and Nonlinear Network-Based Method on Multi-Source miRNA-Disease Association Prediction

ZHAO Jing, LI Haolin, WANG Huiqing, WANG Bin

Journal of East China University of Science and Technology, 2023, 49(3): 439-449.

A miRNA-disease association prediction model GCNMSF is proposed, which utilizes multi-source similarities and combines the linear features learned by non-negative matrix factorization (NMF) and the nonlinear features learned by graph convolutional network (GCN). The proposed model can realize the prediction of miRNA-disease associations effectively.

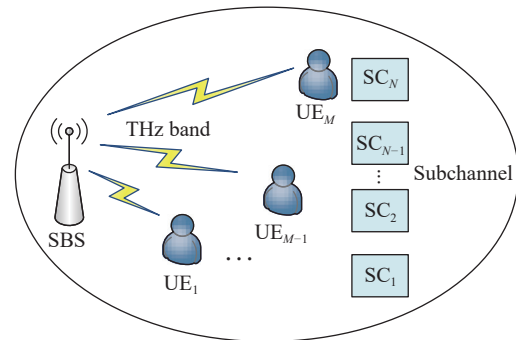


Energy-Efficiency Resource Allocation Algorithm for THz-NOMA System

YU Haizeng, YUAN Weina, SUN Shuhuan, ZHU Yu

Journal of East China University of Science and Technology, 2022, 49(3): 450-456.

Resource allocation problem of Terahertz-Non-orthogonal Multiple Access (THz-NOMA) system consists of three parts. Firstly, in order to reduce the complexity of subchannel allocation search, which is regarded as a two side match (TSM) problem, and an algorithm based on TSM is proposed. Secondly, a closed form solution for user optimal power allocation within subchannels is derived. Finally, in order to further improve the energy efficiency of the system, the inter-channel power allocation problem is transformed into a convex difference (DC) programming problem, and a power allocation algorithm based on DC programming is proposed.



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