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The selection of adaptive region of geomagnetic map based on PCA and GA-BP neural network

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The selection of adaptive region of geomagnetic map is an important factor that affects the positioning accuracy of geomagnetic navigation. An automatic recognition and classification method of adaptive region of geomagnetic background field based on Principal Component Analysis (PCA) and GA-BP neural network is proposed. Firstly, PCA is used to analyze the geomagnetic characteristic parameters, and the independent characteristic parameters containing principal components are selected. Then, the GA-BP neural network model is constructed, and the correspondence between the geomagnetic characteristic parameters and matching performance is established, so as to realize the recognition and classification of adaptive region. Finally, Simulation results show that the method is feasible and efficient, and the positioning accuracy of geomagnetic navigation is improved.