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(54) **Title:** NEURAL NETWORK TRAINING METHOD AND RELATED DEVICE

(54) **发明名称:** 一种用于神经网络的训练方法以及相关设备

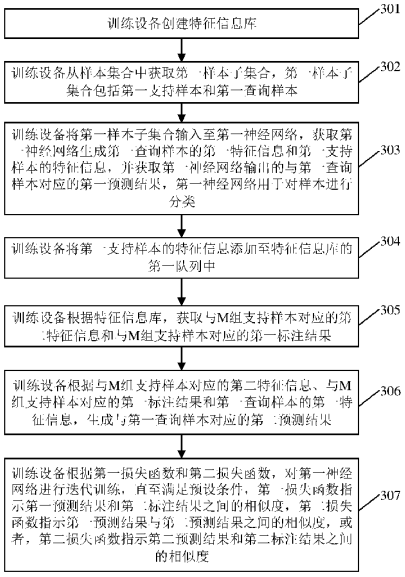

图 3

301 A training device creates a feature information database
302 The training device acquires a first sample subset from a sample set, the first sample subset comprising a first support sample and a first query sample
303 The training device inputs the first sample subset into a first neural network, to acquire first feature information of the first query sample generated by the first neural network and feature information of the first support sample, and acquire a first prediction result, outputted by the first neural network, corresponding to the first query sample, the first neural network being used to classify samples
304 The training device adds the feature information of the first support sample into a first queue of the feature information database
305 The training device acquires, according to the feature information database, second feature information corresponding to M groups of support samples and a first labeling result corresponding to the M groups of support samples
306 The training device generates a second prediction result corresponding to the first query sample according to the second feature information corresponding to M groups of support samples, the first labeling result corresponding to the M groups of support samples and the first feature information of the first query sample
307 The training device performs iterating training on the first neural network according to a first loss function and a second loss function, until a preset condition is satisfied, the first loss function indicating the similarity between the first prediction result and a second labeling result, the second loss function indicating the similarity between the first prediction result and the second prediction result, or the second loss function indicating the similarity between the second prediction result and the second labeling result

(57) **Abstract:** A neural network training method and a related device, relating to meta-learning technology in the field of artificial intelligence. Said method comprises: inputting a first sample subset into a first neural network, to generate first feature information and a first prediction result of a first query sample; according to second feature information corresponding to M groups of support samples included in a sample set, a first labeling result and the first feature information, generating a second prediction result of the first query sample and training the first neural network; and a first loss function indicating the similarity between the first prediction result and a

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second labeling result, and a second loss function indicating the similarity between the first prediction result and the second labeling result, or indicating the similarity between the second prediction result and the second labeling result. With said method, differences in feature dimensions between different samples in a few-shot task and differences in feature dimensions between a plurality of categories of samples corresponding to a plurality of few-shot tasks are simultaneously learnt, thereby improving the accuracy of a prediction result.

(57) 摘要：一种用于神经网络的训练方法以及相关设备，涉及人工智能领域中的元学习技术。方法包括：将第一样本子集合输入第一神经网络，生成第一查询样本的第一特征信息和第一预测结果，根据与样本集合包括的M组支持样本对应的第二特征信息、第一标注结果和第一特征信息，生成第一查询样本的第二预测结果，对第一神经网络进行训练；第一损失函数指示第一预测结果和第二标注结果之间的相似度，第二损失函数指示第一预测结果与第二预测结果之间的相似度，或指示第二预测结果和第二标注结果之间的相似度。该方法同时学习一个小样本任务中不同样本在特征维度的区别以及多个小样本任务对应的多个类别的样本在特征维度的区别，提高预测结果的精度。