

AIPLA

American Intellectual Property Law Association

December 10, 2019

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Via email tiaofasi@cnipa.gov.cn

Re: Comments regarding Draft Amendment to Chapter 9, Part II of Patent Examination Guidelines of China 《专利审查指南第二部分第九章修改草案（征求意见稿）》

Dear Sir or Madam,

The American Intellectual Property Law Association (AIPLA) appreciates the opportunity to comment on the draft Amendment to Chapter 9, Part II of the Chinese Patent Examination Guidelines. The comment deadline is before December 11, 2019. A table listing AIPLA's detailed comments is attached. A partial summary of the comments is also provided below.

AIPLA is a national bar association of approximately 12,000 members engaged in private or corporate practice, in government service, and in the academic community. AIPLA members represent a wide and diverse spectrum of individuals, companies, and institutions involved directly or indirectly in the practice of patent, trademark, copyright, trade secret, and unfair competition law, as well as other fields of law affecting intellectual property. Our members represent both owners and users of intellectual property. Our mission includes helping establish and maintain fair and effective laws and policies that stimulate and reward invention while balancing the public's interest in healthy competition, reasonable costs, and basic fairness.

AIPLA commends this proposal from CNIPA to provide guidance on examination of invention patent applications related to artificial intelligence, Internet+, big data, and blockchain.

Due to time constraints, AIPLA focused its comments on a few articles of the draft Revisions to Chapter 9, Part II of the Chinese Patent Examination Guidelines identified below or in the attached comment table. The absence of comments on other articles does not necessarily reflect support or lack of support of these articles by AIPLA.

Regarding Section 6.1 Basis of Examination, AIPLA notes that the requirement of evaluating a claim as a whole is important in ensuring proper and predictable outcomes during patent examination and recommends that this standard be adopted and applied in examination of all invention applications, if it has not been adopted.

Regarding Section 6.1.1 Examination under Article 25, Paragraph 1, Item 2 of the Chinese Patent Law, AIPLA commends CNIPA's proposal to provide clarification on examination of patent claims related to algorithm or business rule and method. However, AIPLA notes that not all business rules/methods, even without any technical feature, may be viewed or treated as "mental activities" as this term is generally understood. It appears that the first sentence in the last paragraph of this section, which states that "if a claim recites a business rule/method or algorithm that is coupled with technical features and the claim as a whole is not directed to mental activities, the claim satisfies Art 25.1.2," does not provide precise and accurate guidance as intended. This section sets forth a standard that appears to be circular. The standard requires a clear understanding of the term "mental activities" and the successful implementation of this section would depend on how "mental or intellectual activities" is defined. Based on the US experience with the "abstract idea" jurisprudence, the definition of "abstract idea" depends on what is classified as "abstract idea" by USPTO guidelines and court rulings. AIPLA respectfully recommends that CNIPA revise this sentence to provide better and clearer examination guidance.

Regarding Section 6.1.3 Examination of Novelty and Inventiveness, AIPLA notes that the novelty standard and the inventiveness standard can and should remain consistent for all inventions. It appears that the additional requirement of considering technical features when determining the inventiveness of a claim directed to algorithms or business rules/methods is an attempt to combine the patent eligibility standard with the novelty/inventiveness standard. AIPLA believes that it is a better approach if the determination of patent eligibility remains a separate analysis from the novelty or inventiveness analysis.

Regarding Section 6.2. Examination Examples, [Example 1], AIPLA respectfully notes that in some cases, a general field such as artificial intelligence or cloud data may be understood or interpreted as a specific application field. AIPLA suggests that, to clarify the term "specific application field," CNIPA consider providing counter-examples to illustrate what level of specificity would be sufficient when incorporating an application field into a claim directed to algorithm. Also as a general note, supplementing a negative example, i.e., an example that provides a negative conclusion, with counter or contrasting examples often improves clarity.

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Regarding [Example 2], AIPLA commends this proposal to provide clarification of examination of patent applications by providing this example of an artificial intelligence related claim.

Regarding [Example 3], AIPLA respectfully notes that Section 6.1.2 sets out the proper requirement of “consider all features recited in the claim as a whole.” Here in [Example 3] (method for using shared bicycles) the analysis focuses on an entire invention, not one single claim. This could cause confusion with respect to whether the patentability standard should be focused on the entire invention or should be applied on a claim by claim basis. In this particular example, an experienced patent practitioner would have divided the steps into two separate claims, one directed to the steps performed by the server and one directed to the those performed by the users, to avoid divided infringement issue. If the analysis of the entire invention indicates that the subject matter is patent eligible, would the claims directed to different portions of the invention be deemed patent eligible as well?

Regarding Section 6.3.1 Drafting of Patent Specification, AIPLA welcomes the proposed clarification directed to algorithms, business rules and method feature. However, AIPLA respectfully recommends that CNIPA consider clarifying the term “specific application field” in this section as discussed above in AIPLA’s comments to Section 6.1.3 (Examination of novelty and inventiveness) as well as Example [3] above.

We appreciate the opportunity to provide these comments on the draft Revisions to the Chinese Patent Examination Guidelines, and we would be happy to answer any questions that our comments may raise.

Sincerely,



Barbara A. Fiocco
President
American Intellectual Property Law Association

Attachment: Table of AIPLA Comments on the Draft Amendment to Chapter 9, Part II of Patent Examination Guidelines of China

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| <p>6. 包含算法特征或商业规则和方法特征的发明专利申请审查相关规定</p> <p>涉及人工智能、互联网+、大数据以及区块链等的发明专利申请，一般包含算法或商业规则和方法等智力活动的规则和方法特征，本节旨在根据专利法及其实施细则，对这类申请的审查特殊性做出规定。</p> | <p>6. Some Provisions on Examination of Invention patent applications containing algorithm or business rule and method features</p> <p>In invention patent applications involving artificial intelligence, Internet+ , big data and blockchain, it is usual to contain rule and method features for mental activities such as the algorithm or business rule and method features. This section aims to provide specific provisions on examination of such applications in accordance with the Chinese Patent Law and the Implementing Regulations thereof.</p> | <p>AIPLA commends this proposal from CNIPA to provide guidance on examination of invention patent applications related to artificial intelligence, Internet+, big data, and blockchain.</p> |
| <p>6.1 审查基准</p> <p>审查应当针对要求保护的解决方案，即权利要求所限定的解决方案进行。在审查中，不应当简单割裂技术特征与算法特征或商业规则和方法特征等，而应将权利要求记载的所有内容作为一个整体，对其中涉及的技术手段、解决的技术问题和获得的技术效果进行分析。</p> | <p>6.1 Criterion for Examination</p> <p>Examination should be conducted on a claimed solution, i.e., a solution defined by a claim. In examination, technical features should not be simply isolated from algorithm or business rule and method features, and a claim should be considered as a whole to analyze the technical means, the technical problem to be solved, and the technical effect to be achieved involved in the claim.</p> | <p>AIPLA notes that the requirement of evaluating a claim as a whole is important in ensuring proper and predictable outcomes during patent examination and recommends that this standard be adopted and applied in examination of all invention application, if it has not been adopted.</p> |
| <p>6.1.1 根据专利法第二十五条第一款第（二）项的审查</p> <p>如果权利要求涉及抽象的算法或者单纯的商业规则和方法，且不包含任何技术特征，则这项权利要求属于专利法第二十五条第一款第（二）项规定的智力活动的规则和方法，不应当被授予专利权。例如，一种基于抽象算法且不包含任何技术特征的数学模型建立方法，属于专利法第二十五条第一款第（二）项规定的不应当被授予专利权的情形。再如，一种根据用户的消费额度进行返利的方法，该方法中包含的特征全部是与返利规则相关的商业规则和方法特征，不包含任何技术特征，属于专利法第二十五条第一款第（二）项规定的不应当被授予</p> | <p>6.1.1 Examination according to Article 25, Paragraph 1, Item (2) of the Chinese Patent Law</p> <p>If a claim relates to an abstract algorithm or a pure business rule and method and does not contain any technical feature, then the claim belongs to rules and methods for mental activities stipulated in Article 25, Paragraph 1, Item(2) of the Chinese Patent Law and thus should not be granted a patent right. As an example, a method for establishing a mathematical model, which is based on the abstract algorithm and does not contain any technical feature, belongs to circumstances excluded from patent protection as stipulated in Article 25, Paragraph 1, Item (2) of the Chinese Patent Law. As another example, a method of rebate according to a consumption quota of a user, where features contained therein are all business rule and method features and that the method relates with rebate rules rather than any technical features, belongs to the circumstances excluded</p> | <p>AIPLA commends CNIPA’s proposal to provide clarification on examination of patent claims related to algorithm or business rule and method. However, AIPLA notes that <u>not</u> all business rules/methods, even without any technical feature, may be viewed or treated as “mental activities” as this term is generally understood. For example, a method of pooling capital resources to fund a social project would not normally be viewed as mental or intellectual activities.</p> <p>Therefore, it appears that the first sentence in the last paragraph of this section, which states that “if a claim recites a business rule/method or algorithm that is coupled with technical features and the claim as a whole is not directed to mental activities, the claim satisfies Art 25.1.2,” does not provide precise and accurate guidance as intended.</p> <p>The successful implementation of this section, which is trying to provide guidance on what should be treated as mental/intellectual</p> |

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| <p>专利权的情形。</p> <p>如果权利要求中除了算法特征或商业规则和方法特征，还包含技术特征，该权利要求就整体而言并不是一种智力活动的规则和方法，则不应当依据专利法第二十五条第一款第（二）项排除其获得专利权的可能性。</p> | <p>from patent protection as stipulated in Article 25, Paragraph 1, Item (2) of the Chinese Patent Law.</p> <p>If a claim contains technical features in addition to algorithm or business rule and method features, the claim as a whole does not belong to the rules and methods for mental activities and thus should not be excluded from patent protection in accordance with Article 25, Paragraph 1, Item(2) of the Chinese Patent Law.</p> | <p>activities hence patent ineligible, would depend on how “mental or intellectual activities” is defined. In the US, the experience with the “abstract idea” jurisprudence has been frustrating, one reason being that the definition of “abstract idea” depends on what is classified as “abstract idea” by USPTO guidelines and court rulings.</p> <p>AIPLA respectfully recommends that CNIPA revise this sentence to provide better and clearer examination guidance.</p> |
| <p>6.1.2 根据专利法第二条第二款的审查</p> <p>如果要求保护的权利要求作为一个整体不属于专利法第二十五条第一款第（二）项排除获得专利权的情形，则需要就其是否属于专利法第二条第二款所述的技术方案进行审查。</p> <p>对一项包含算法特征或商业规则和方法特征的权利要求是否属于技术方案进行审查时，需要整体考虑权利要求中记载的全部特征。如果该项权利要求记载了对要解决的技术问题采用了利用自然规律的技术手段，并且由此获得符合自然规律的技术效果，则该权利要求的解决方案属于专利法第二条第二款所述的技术方案。例如，如果权利要求中涉及算法的各个步骤体现出与所要解决的技术问题密切相关，如算法处理的数据是技术领域中具有确切技术含义的数据，算法的执行能直接体现出利用自然规律解决某一技术问题的过程，并且获得了技术效果，则通常该权利要求的解决方案属于专利法第二条第二款所述的技术方案。</p> | <p>6.1.2 Examination according to Article 2, Paragraph 2 of the Chinese Patent Law</p> <p>If a claim as a whole does not belong to the circumstances excluded from patent protection as stipulated in Article 25, Paragraph 1, Item(2) of the Chinese Patent Law, then it is required to further examine whether the claim belongs to technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law.</p> <p>When examining whether a claim containing algorithm or business rule and method features is a technical solution, it is required to consider all features recited in the claim as a whole. If the claim recites technical means in conformity with the laws of nature, which are employed to solve technical problems and thus to obtain technical effects in conformity with the laws of nature, then the solution of the claim belongs to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law. For example, if respective steps of an algorithm involved in the claim are closely related with the technical problems to be solved (for example, if the data processed by the algorithm is data having exact technical meaning in a technical field, and the execution of the algorithm can directly reflect the process of solving the technical problems by utilizing the laws of nature and thus the technical effects are obtained), then the solution of the claim usually belongs to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law.</p> | |
| <p>6.1.3 新颖性和创造性的审查</p> <p>对包含算法特征或商业规则和方法特征的发明专利申请</p> | <p>6.1.3 Examination of novelty and inventiveness</p> <p>In the examination of novelty of invention patent applications containing algorithm or business rule and method features, all features including both technical features and the algorithm or</p> | <p>AIPLA respectfully suggests that the novelty standard and the inventiveness standard can and should remain consistent for all inventions. It appears that here the additional requirement of considering technical features when determining the inventiveness of a claim directed to algorithms or business rules/methods would</p> |

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| <p>进行新颖性审查时，应当考虑权利要求记载的全部特征，所述全部特征既包括技术特征，也包括算法特征或商业规则和方法特征。</p> <p>对既包含技术特征又包含算法特征或商业规则和方法特征的发明专利申请进行创造性审查时，应将与技术特征功能上彼此相互支持、存在相互作用关系的算法特征或商业规则和方法特征与所述技术特征作为一个整体考虑。“功能上彼此相互支持、存在相互作用关系”是指算法特征或商业规则和方法特征与技术特征紧密结合、共同构成了解决某一技术问题的技术手段，并且能够获得相应的技术效果。</p> <p>例如，如果权利要求中的算法应用于具体的技术领域，可以解决具体技术问题，那么可以认为该算法特征与技术特征功能上彼此相互支持、存在相互作用关系，该算法特征成为所采取的技术手段的组成部分，在进行创造性审查时，应当考虑所述的算法特征对方案作出的贡献。</p> <p>再如，如果权利要求中的商业规则和方法特征的实施需要技术手段的调整或改进，那么可以认为该商业规则和方法特征与技术特征功能上彼此相互支持、存在相互作用关系，在进行创造性审查时，应当考虑所述的商业规则和方法特征对方案作出的贡献。</p> | <p>business rule and method features recited in a claim should be taken into account.</p> <p>In the examination of inventiveness of the invention patent applications containing both the technical features and the algorithm or business rule and method features, the technical features and algorithm or business rule and method features that have mutual supportive and interactive relations in function with the technical features should be considered as a whole. “Mutual supportive and interactive relations in function” means that the technical features and the algorithm or business rule and method features are closely combined to constitute the technical means to solve technical problems and thus corresponding technical effects can be obtained.</p> <p>For example, if the application of algorithm features in a claim to a specific technical field can solve a specific technical problem, then the algorithm features usually have mutual supportive and interactive relations in function with technical features, and the algorithm features become constituent parts of the technical means employed to solve the technical problem. In the examination of inventiveness of the claim, contributions of the algorithm features to the solution of the claim should be taken into account.</p> <p>As another example, if it is required to adapt or improve the technical means to implement business rule and method features in a claim, then the business rule and method features usually have mutual supportive and interactive relations in function with technical features. In the examination of inventiveness of the claim, contributions of the business rule and method features to the solution of the claim should be taken into account.</p> | <p>combine the patent eligibility standard with the novelty/inventiveness standard.</p> <p>AIPLA suggests that CNIPA consider eliminating this section from the proposed guidelines as well as Examples 7, 8, 9, and 10. AIPLA believes that it is a better approach if the determination of patent eligibility remains a separate analysis from the novelty or inventiveness analysis.</p> |
| <p>6.2 审查示例</p> | <p>6.2 Examination Examples</p> | |
| <p>以下，根据上述审查基准，给出包含算法特征或商业规则和方法特征的发明专利申请的审查示例。</p> | <p>In accordance with the above examination criteria, examination examples of invention patent applications containing algorithm or business rule and method features are set forth below.</p> | |

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| <p>(1) 属于专利法第二十五条第一款第(二)项范围内的包含算法特征或商业规则和方法特征的发明专利申请, 不属于专利保护的客体。</p> | <p>(1) Invention patent applications containing algorithm or business rule and method features, which belong to the circumstances stipulated in Article 25, Paragraph 1, Item (2) of the Chinese Patent Law, are not objects of patent protection.</p> | |
| <p>【例 1】 一种建立数学模型的方法 申请内容概述 发明专利申请的解决方案是一种建立数学模型的方法, 通过增加训练样本数量, 提高建模的准确性。该建模方法将与第一分类任务相关的其它分类任务的训练样本也作为第一分类任务数学模型的训练样本, 从而增加训练样本数量, 并利用训练样本的特征值、提取特征值、标签值等相关数学模型进行训练, 并最终得到第一分类任务的数学模型, 克服了由于训练样本少导致过拟合而建模准确性较差的缺陷。 申请的权利要求 一种建立数学模型的方法, 其特征在于, 包括以下步骤: 根据第一分类任务的训练样本中的特征值和至少一个第二分类任务的训练样本中的特征值, 对初始特征提取模型进行训练, 得到目标特征提取模型; 其中, 所述第二分类任务是与所述第一分类任务相关的其它分类任务; 根据所述目标特征提取模型, 分别对所述第一分类任务的每个训练样本中的特征值进行处理, 得到所述每个训练样本对应的提取特征值;</p> | <p>[Example 1] A method for establishing a mathematical model Application summary: This invention patent application relates to a method for establishing a mathematical model, which can improve modeling accuracy by increasing the number of training samples. Specifically, the method takes the training samples for other classification tasks related to a first classification task as the training samples for the mathematical model of the first classification task to increase the number of the training samples, and trains a relevant mathematical model by using feature values, extraction feature values, tag values and so on of the training samples to obtain the mathematical model of the first classification task, so that the defect of poor modeling accuracy due to the small number of the training samples is overcome. Claims in the application: A method for establishing a mathematical model, characterized in comprising: training an initial feature extraction model to obtain a target feature extraction model based on feature values in training samples for a first classification task and feature values in training samples for at least one second classification task, wherein the second classification task is another classification task related to the first classification task; processing the feature values in every training sample for the first classification task respectively to obtain extraction feature values corresponding to every training sample based on the target feature extraction model; forming extraction training samples by the extraction feature values and tag values corresponding to every training</p> | <p>AIPLA respectfully notes that in some cases, a general field such as artificial intelligence or cloud data may be understood or interpreted as a specific application field. AIPLA suggests that, to clarify the term “specific application field,” CNIPA consider providing counter-examples to illustrate what level of specificity would be sufficient when incorporating an application field into a claim directed to an algorithm. For example, in a data process method for handling medical records, if the method is applied to medical data collected by hospitals, would the claim be considered as related to an application field under this guideline? What about a method that is applied to cancer patient medical data?</p> |

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| <p>将所述每个训练样本对应的提取特征值和标签值组成提取训练样本，对初始分类模型进行训练，得到目标分类模型；</p> <p>将所述目标分类模型和所述目标特征提取模型组成所述第一分类任务的数学模型。</p> <p>分析及结论</p> <p>该解决方案不涉及任何具体的应用领域，其中处理的训练样本的特征值、提取特征值、标签值、目标分类模型以及目标特征提取模型都是抽象的通用数据，利用训练样本的相关数据对数学模型进行训练等处理过程是一系列抽象的数学方法步骤，最后得到的结果也是抽象的通用分类数学模型。该方案是一种抽象的模型建立方法，其处理对象、过程和结果都不涉及与具体应用领域的结合，属于对抽象的数学方法的优化，且整个方案并不包括任何技术特征，该发明专利申请的解决方案属于专利法第二十五条第一款第（二）项规定的智力活动的规则和方法，不属于专利保护客体。</p> | <p>sample to train an initial classification model and thus obtain a target classification model; and forming the mathematical model of the first classification task by the target classification model and the target feature extraction model.</p> <p>Analysis and conclusion:</p> <p>This solution does not relate to any specific application field, and the feature values, the extraction feature values, the tag values of the training samples, the target classification model and the target feature extraction model are all abstract general data, and the process of training the mathematical model by using relevant data of the training samples is a series of steps of an abstract mathematical process, the result of which is the mathematical model for abstract general classification. This solution is an abstract method for modeling and none of its processing object, process and result relates to any combination with a specific application field. So this solution relates to optimization of an abstract mathematical method and does not include any technical feature. Therefore, this solution belongs to the rules and methods for mental activities stipulated in Article 25, Paragraph 1, Item(2) of the Chinese Patent Law and thus is not an object of patent protection.</p> | |
| <p>(2) 为了解决技术问题而利用技术手段，并获得技术效果的包含算法特征或商业规则和方法特征的发明专利申请属于专利法第二条第二款规定的技术方案，因而属于专利保护的客体。</p> | <p>(2) Invention patent applications containing algorithm or business rule and method features, which are used to solve technical problems and achieve technical effects by using technical means, belong to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law and thus are patentable subject matters.</p> | |
| <p>【例 2】</p> <p>一种卷积神经网络模型的训练方法</p> <p>申请内容概述</p> <p>发明专利申请在各级卷积层上对训练图像进行卷积操作和最大池化操作后，进一步对最大池化操作后得到的特征图像进行水平池化操作，使训练好的 CNN 模</p> | <p>[Example 2]</p> <p>A method for training a convolutional neural network (CNN) model</p> <p>Application summary:</p> | <p>AIPLA commends this proposal to provide clarification of examination of patent applications by providing this example of an artificial intelligence related claim.</p> |

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| <p>型在识别图像类别时，能够识别任意尺寸的待识别图像。</p> <p> 申请的权利要求</p> <p> 一种卷积神经网络 CNN 模型的训练方法，其特征在于，所述方法包括：</p> <p> 获取待训练 CNN 模型的初始模型参数，所述初始模型参数包括各级卷积层的初始卷积核、所述各级卷积层的初始偏置矩阵、全连接层的初始权重矩阵和所述全连接层的初始偏置向量；</p> <p> 获取多个训练图像；</p> <p> 在所述各级卷积层上，使用所述各级卷积层上的初始卷积核和初始偏置矩阵，对每个训练图像分别进行卷积操作和最大化池化操作，得到每个训练图像在所述各级卷积层上的第一特征图像；</p> <p> 对每个训练图像在至少一级卷积层上的第一特征图像进行水平池化操作，得到每个训练图像在各级卷积层上的第二特征图像；</p> <p> 根据每个训练图像在各级卷积层上的第二特征图像确定每个训练图像的特征向量；</p> <p> 根据所述初始权重矩阵和初始偏置向量对每个特征向量进行处理，得到每个训练图像的分类概率向量；</p> <p> 根据所述每个训练图像的分类概率向量及每个训练图像的初始类别，计算类别误差；</p> <p> 基于所述类别误差，对所述待训练 CNN 模型的模型参数进行调整；</p> | <p>This invention patent application implements convolution and max pooling operations on a training image on respective convolutional layers, and then implements a horizontal pooling operation on a feature image obtained after the max pooling operation, so that the trained CNN model can identify images to be identified of any size when identifying categories of the images.</p> <p>Claims in the application:</p> <p>A method for training a convolutional neural network (CNN) model, characterized in comprising:</p> <p style="padding-left: 2em;">acquiring initial model parameters of a CNN model to be trained, the initial model parameters including initial convolution kernels and initial bias matrices of respective convolutional layers, and initial weight matrices and initial bias vectors of fully connected layers;</p> <p style="padding-left: 2em;">obtaining a plurality of training images;</p> <p>on respective convolutional layers, implementing convolution and max pooling operations on each training image by using the initial convolution kernels and the initial bias matrices of respective convolutional layers to obtain first feature images of each training image on respective convolutional layers;</p> <p style="padding-left: 2em;">implementing horizontal pooling operations on the first feature images of each training image on at least one convolutional layer to obtain second feature images of each training image on respective convolutional layers;</p> <p>determining feature vectors of each training image based on the second feature images of each training image on respective convolutional layers;</p> <p style="padding-left: 2em;">processing each feature vector based on the initial weight matrices and the initial bias vectors to obtain category probability vectors of each training image;</p> <p style="padding-left: 2em;">calculating category errors based on the category probability vectors and initial categories of each training image;</p> <p style="padding-left: 2em;">adjusting model parameters of the CNN model to be trained based on the category errors;</p> <p>proceeding to adjust the model parameters based on the adjusted model parameters and the plurality of training images until the number of iterations reaches a preset number;</p> | |

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| <p>基于调整后的模型参数和所述多个训练图像, 继续进行模型参数调整的过程, 直至迭代次数达到预设次数;</p> <p>将迭代次数达到预设次数时所得到的模型参数作为训练好的 CNN 模型的模型参数。</p> <p>分析及结论</p> <p>该解决方案是一种卷积神经网络 CNN 模型的训练方法, 其中明确了模型训练方法的各步骤中处理的数据均为图像数据以及各步骤如何处理图像数据, 体现出神经网络训练算法与图像信息处理密切相关。该解决方案所解决的是如何克服 CNN 模型仅能识别具有固定尺寸的图像的技术问题, 该方案采用了在不同卷积层上对图像进行不同处理并训练的手段, 利用的是遵循自然规律的技术手段, 获得了训练好的 CNN 模型能够识别任意尺寸待识别图像的技术效果。因此, 该发明专利申请的解决方案属于专利法第二条第二款规定的技术方案, 属于专利保护客体。</p> | <p>taking the model parameters obtained when the number of iterations reaches the preset number as the model parameters of the trained CNN model.</p> <p>Analysis and conclusion:</p> <p>This solution relates to a method for training a convolutional neural network (CNN) model, wherein it is defined that data processed in respective steps of the model training method is image data and how to process the image data in respective steps. In the solution, the neural network training algorithm is closely related to image information processing. The technical problem solved by this solution is to overcome the defect that the CNN model can only identify images of a fixed size. This solution employs the technical means of differently processing and training the image in different convolutional layers, which is in conformity with the laws of nature, and achieves the technical effect that the trained CNN model can identify the images to be identified of any size. Therefore, this solution belongs to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law and thus is a patentable subject matter.</p> | |
| <p>【例 3】</p> <p>一种共享单车的使用方法</p> <p>申请内容概述</p> <p>发明专利申请提出一种共享单车的使用方法, 通过获取用户终端设备的位置信息和对应一定距离范围内的共享单车的状态信息, 使用户可以根据共享单车的状态信息准确地找到可以骑行的共享单车, 进行骑行并通过提示引导用户进行停车, 该方法方便了租赁单车的使用和管理, 节约了用户的时间, 提升了用户体验。</p> <p>申请的权利要求</p> | <p>[Example 3]</p> <p>A method for using shared bicycles</p> <p>Application summary:</p> <p>This invention patent application relates to a method for using shared bicycles, which enables a user to accurately locate a shared bicycle available to ride based on status information of shared bicycles within a certain distance from the user by acquiring location information of a terminal device of the user and the status information of the shared bicycles, and ride and park the bicycle by providing the user with a guidance. The method facilitates usage and management of the rental bicycles, saves time of the user, and improves experiences of the user.</p> | <p>AIPLA respectfully notes that Section 6.1.2, sets out the proper requirement of “consider all features recited in the claim as a whole” Here in Example [3] (method for using shared bicycles) the analysis focuses on an entire invention, not one single claim. This could cause confusion with respect to whether the patentability standard should be focused on the entire invention or should be applied on a claim by claim basis. In this particular example, an experienced patent practitioner would have divided the steps into two separate claims, one directed to the steps performed by the server and one directed to those performed by the users, to avoid divided infringement issue. If the analysis of the entire invention indicates that the subject matter is patent eligible, would the claims directed to different portions of the invention be deemed patent eligible as well? (Note whether the claims are novel or inventive would be separate questions.)</p> |

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| <p>一种共享单车的使用方法，其特征在于，包括以下步骤：</p> <p>步骤一，用户通过终端设备向服务器发送共享单车的使用请求；</p> <p>步骤二，服务器获取用户的第一位置信息，查找与所述第一位置信息对应一定距离范围内的共享单车的第二位置信息，以及这些共享单车的状态信息，将所述共享单车的第二位置信息和状态信息发送到终端设备，其中第一位置信息和第二位置信息是通过 GPS 信号获取的；</p> <p>步骤三，用户根据终端设备上显示的共享单车的位置信息，找到可以骑行的目标共享单车；</p> <p>步骤四，用户通过终端设备扫描目标共享单车身上的二维码，通过服务器认证后，获得目标共享单车的使用权限；</p> <p>步骤五：服务器根据骑行情况，向用户推送停车提示，若用户将车停放在指定区域，则采用优惠资费进行计费，否则采用标准资费进行计费；</p> <p>步骤六，用户根据所述提示进行选择，骑行结束后，用户进行共享单车的锁车动作，共享单车检测到锁车状态后向服务器发送骑行完毕信号。</p> <p>分析及结论</p> <p>该解决方案涉及一种共享单车的使用方法，所要解决的是匹配共享单车的位置并获得共享单车的使用权限的技术问题，该方案通过执行终端设备和服务器上的计算机程序实现了对用户使用共享单车行为的控制和引导，反映的是对位置信息、认证等数据进行采集和计</p> | <p>Claims in the application:</p> <p>A method for using shared bicycles, characterized in comprising:</p> <p>Step 1: a user manipulating a terminal device to send a request to use a shared bicycle to a server;</p> <p>Step 2: the server acquiring first location information of the user, searching for second location information and status information of shared bicycles within a certain distance corresponding to the first location information, and sending the second location information and the status information of the shared bicycles to the terminal device, wherein the first location information and the second location information are acquired through GPS signals;</p> <p>Step 3: the user finding out a target shared bicycle available to ride according to the location information of the shared bicycles displayed on the terminal device;</p> <p>Step 4: the user manipulating the terminal device to scan a QR code on the target shared bicycle and get a permission to use the target shared bicycle after authentication by the server;</p> <p>Step 5: according to riding conditions, the server pushing to the user a parking tip of charging with a preferential rate if the user parks the target shared bicycle in a designated area, or else charging with a standard rate;</p> <p>Step 6: the user making a selection according to the tip, and locking the shared bicycle after the riding is completed, wherein the shared bicycle sends a completion signal to the server upon detecting that the shared bicycle is locked.</p> <p>Analysis and conclusion:</p> <p>This solution relates to a method for using shared bicycles, in which the technical problem to be solved by which is to match the location of a shared bicycle and get the permission to use the shared bicycle. This solution controls and guides the behavior of using the shared bicycle by the user by means of computer programs executed on the terminal device and the server, which uses the technical means of the controlling of collecting and calculating data like location information, authentication data and so on, and therefore is in conformity with the laws of nature, and achieves the technical effects including matching the location of the shared bicycle and getting the</p> | |

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| 算的控制，利用的是遵循自然规律的技术手段，实现了匹配共享单车的位置、获得共享单车的使用权限等技术效果。因此，该发明专利申请的解决方案属于专利法第二条第二款规定的技术方案，属于专利保护的客体。 | permission to use the shared bicycle. Therefore, this solution belongs to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law and thus is a patentable subject matter. | |
| <p>【例 4】 一种区块链节点间通信方法及装置</p> <p>申请内容概述</p> <p>发明专利申请提出一种区块链节点通信方法和装置，区块链中的业务节点在建立通信连接之前，可以根据通信请求中携带的 CA 证书以及预先配置的 CA 信任列表，确定是否建立通信连接，从而减少了业务节点泄露隐私数据的可能性，提高了区块链中存储数据的安全性。</p> <p>申请的权利要求</p> <p>1. 一种区块链节点通信方法，区块链网络中的区块链节点包括业务节点，其中，所述业务节点存储证书授权中心 CA 发送的证书，并预先配置有 CA 信任列表，所述方法包括：</p> <p style="padding-left: 2em;">第一区块链节点接收第二区块链节点发送的通信请求，其中，所述通信请求中携带有第二区块链节点的第二证书；</p> <p style="padding-left: 2em;">确定所述第二证书对应的 CA 标识；</p> <p style="padding-left: 2em;">判断确定出的所述第二证书对应的 CA 标识，是否存在于所述 CA 信任列表中；</p> <p style="padding-left: 2em;">若是，则与所述第二区块链节点建立通信连接；</p> <p style="padding-left: 2em;">若否，则不与所述第二区块链节点建立通信连接。</p> | <p>[Example 4]</p> <p>A method and device for communication between nodes of blockchain</p> <p>Application summary:</p> <p style="padding-left: 2em;">This invention patent application relates to a method and device for communication between nodes of block chain, a service node in a blockchain can determine, before establishing a communication connection, whether to establish the communication connection according to a CA certificate carried in a communication request and a pre-configured CA trust list, so that the possibility of private data leakage by the service node is reduced, and the security of the stored data in the blockchain is improved.</p> <p>Claims in the application:</p> <p>1. A method for communication between nodes of a block chain, the nodes of the blockchain in a blockchain network comprise a service node, wherein, the service node stores certificates sent by a certificate authority center (CA) and is preconfigured with a CA trust list, the method comprising:</p> <p style="padding-left: 2em;">receiving, by a first blockchain node, a communication request sent by a second blockchain node, wherein the communication request carries a second certificate of the second blockchain node;</p> <p style="padding-left: 2em;">determining a CA identifier corresponding to the second certificate;</p> <p style="padding-left: 2em;">determining whether the determined CA identifier corresponding to the second certificate exists in the CA trust list;</p> | |

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| <p>分析及结论</p> <p>本申请要解决的问题是联盟链网络中如何防止区块链业务节点泄露用户隐私数据的问题，属于提高区块链数据安全性的技术问题；通过在通信请求中携带 CA 证书并预先配置 CA 信任列表的方式确定是否建立连接，限制了业务节点可建立连接的对象，从而提高了区块链中数据的安全性。因此，本申请的区块链节点间通信的方法实现了业务节点间的安全通信，减少了业务节点泄露隐私数据的可能性，属于专利法保护的客体。</p> | <p style="text-align: center;">if the determined CA identifier exists in the CA trust list, establishing a communication connection with the second blockchain node; otherwise, not establishing the communication connection with the second blockchain node.</p> <p>Analysis and conclusion:</p> <p>The problem to be solved by this application is how to prevent the blockchain service node from leaking user privacy data in an alliance chain network, which belongs to a technical problem to improve the security of the blockchain data; by carrying the CA certificate in the communication request and pre-configuring the trust list to determine whether a connection should be established, the objects with which the service node can establish a connection is limited, thereby improving the security of the data in the blockchain. Therefore, the method for communication between nodes of blockchain of the present application realize secure communication between service nodes, reduces the possibility of private data leakage by the service nodes, and thus is a patentable subject matter.</p> | |
| <p>(3) 未解决技术问题，或者未利用技术手段，或者未获得技术效果的包含算法特征或商业规则和方法特征的发明专利申请，不属于专利法第二条第二款规定的技术方案，因而不属于专利保护的客体。</p> | <p>(3) Invention patent applications containing algorithm or business rule and method features, which do not solve any technical problem, employ any technical means or achieve any technical effect, do not belong to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law and thus are not patentable subject matters.</p> | |
| <p>【例 5】</p> <p>一种消费返利的方法</p> <p>申请内容概述</p> <p>发明专利申请提出一种消费返利的方法，通过计算机执行设定的返利规则给予消费的用户现金券，从而提高了用户的消费意愿，为商家获得了更多的利润。</p> <p>申请的权利要求</p> <p>一种消费返利的方法，其特征在于，包括以下步骤：</p> | <p>[Example 5]</p> <p>A method of consumption rebate</p> <p>Application summary:</p> <p>This invention patent application relates to a method of consumption rebate, which gives cash coupons to users through executing preset rebate rules by a computer to increase their willing to spend money and thus get more profit for a merchant.</p> <p>Claims in the application:</p> | |

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| <p>用户在商家进行消费时，商家根据消费的金额返回一定的现金券，具体地，</p> <p>商家采用计算机对用户的消费金额进行计算，将用户的消费金额 R 划分为 M 个区间，其中，M 为整数，区间 1 到区间 M 的数值由小到大，将返回现金券的额度 F 也分为 M 个值，M 个数值也由小到大进行排列；</p> <p>根据计算机的计算值，判断当用户本次消费金额位于区间 1 时，返利额度为第 1 个值，当用户本次消费金额位于区间 2 时，返利额度为第 2 个值，依次类推，将相应区间的返利额度返回给用户。</p> <p>分析及结论</p> <p>该解决方案涉及一种计算机执行的消费返利的方法，其处理对象是用户的消费数据，所要解决的是如何促进用户消费的问题，不构成技术问题，所采用的手段是通过计算机执行人为设定的返利规则，但对计算机的限定只是按照指定的规则根据用户消费金额确定返利额度，不受自然规律的约束，因而未利用技术手段，该方案获得的效果仅仅是促进用户消费，不是符合自然规律的技术效果。因此，该发明专利申请不属于专利法第二条第二款规定的技术方案，不属于专利保护的客体。</p> | <p>A method of consumption rebate, characterized in comprising: a merchant returning cash coupons to users according to consumption amounts of the users when the users consume in the merchant, specifically: the merchant counting, by using a computer, the consumption amounts of the users, dividing the consumption amounts R of the users into M sections and dividing the amounts F of cash coupons to be returned into M numbers, wherein M is an integer, the amounts in section 1 to section M increase with the increasing of section numbers, and the M numbers are arranged in an ascending order; determining, according to the amounts counted by the computer, that the rebate amount is a first number when the consumption amount of the user at this time falls within section 1, the rebate amount is a second number when the consumption amount of the user at this time falls within section 2, and so on, and returning a rebate amount of a corresponding section to the user.</p> <p>Analysis and conclusion:</p> <p>This solution relates to a computer implemented method of consumption rebate, its processing object is consumption data of the users, and the problem to be solved by it is how to promote user consumption, which is not a technical problem. The means employed by this solution is to execute man-made rebate rules by the computer, and it merely defines that the computer determines rebate amounts based on the consumption amounts of the users according to the specified rules, which is not constrained by the laws of nature and thus is not a technical means. The effect achieved by this solution is only to prompt the user consumption, which is not a technical effect in conformity with the laws of nature. Therefore, this solution does not belong to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law and thus is not a patentable subject matter.</p> | |
| <p>【例 6】</p> <p>一种基于用电特征的经济景气指数分析方法 申请内容概述</p> | <p>[Example 6]</p> <p>A method for analyzing an economic sentiment index based on electricity consumption characteristics</p> <p>Application summary:</p> | |

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| <p>发明专利申请通过统计各项经济指标和用电指标，来评估待检测地区的经济景气指数。</p> <p>申请的权利要求</p> <p>一种基于地区用电特征的经济景气指数分析方法，其特征在于，包括以下步骤：</p> <p>根据待检测地区的经济数据和用电数据，选定待检测地区的经济景气指数的初步指标，其中，所述初步指标包括经济指标和用电指标；</p> <p>通过聚类分析方法和时差相关分析法，确定所述待检测地区的经济景气指标体系，包括先行指标、一致指标和滞后指标；</p> <p>根据所述待检测地区的经济景气指标体系，采用合成指数计算方法，获取所述待检测地区的经济景气指数。</p> <p>分析及结论</p> <p>该解决方案是一种经济景气指数的分析和计算方法，其处理对象是各种经济指标、用电指标，解决的问题是对经济走势进行判断，不构成技术问题，所采用的手段是根据经济数据和用电数据对经济情况进行分析，仅是依照经济学规律采用经济管理手段，不受自然规律的约束，因而未利用技术手段，该方案最终可以获得用于评估经济的经济景气指数，不是符合自然规律的技术效果，因此该解决方案不属于专利法第二条第二款规定的技术方案，不属于专利保护的客体。</p> | <p>This invention patent application evaluates the economic sentiment index of an area to be detected by calculating statistics of respective economic indicators and electricity consumption indicators.</p> <p>Claims in the application:</p> <p>A method for analyzing an economic sentiment index based on electricity consumption characteristics of an area, characterized in comprising:</p> <p style="padding-left: 2em;">selecting initial indicators of an economic sentiment index of the area to be detected according to economic data and electricity consumption data of an area to be detected, the initial indicators comprising an economic indicator and an electricity consumption indicator;</p> <p style="padding-left: 2em;">determining an economic sentiment indicator system of the area to be detected by a clustering analysis method and a time difference relevant analysis method, the economic sentiment indicator system comprising a leading indicator, a consistent indicator and a lagging indicator;</p> <p style="padding-left: 2em;">acquiring the economic sentiment index of the area to be detected by a synthetic index calculation method, according to the economic sentiment indicator system of the area to be detected.</p> <p>Analysis and conclusion:</p> <p>This solution relates to a method for analyzing and calculating the economic sentiment index, and its processing objects are various economic indicators and electricity consumption indicators. The problem to be solved by it is to judge an economic trend, which is not a technical problem, and the means employed by it is to analyze economic conditions based on the economic data and the electricity consumption data, which is an economic management means in conformity with the laws of economics rather than a technical means in conformity with the laws of nature. This solution can finally acquire the economic sentiment index for evaluating the economic conditions, which is not a technical effect in conformity with the laws of nature.</p> | |

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| | Therefore, this solution does not belong to the technical solutions stipulated in Article 2, Paragraph 2 of the Chinese Patent Law and thus is not an object of patent protection. | |
| (4) 在进行创造性审查时, 应当考虑与技术特征在功能上彼此相互支持、存在相互作用关系的算法特征或商业规则和方法特征对方案作出的贡献。 | (4) When the examination of inventiveness is carried out, contributions of algorithm features or business rule and method features which have mutual supportive and interactive relations in function with technical features to a solution should be taken into account. | |
| <p>【例 7】 一种基于多传感器信息仿人机器人跌倒状态检测方法</p> <p>申请内容概述</p> <p>现有对仿人机器人步行时跌倒状态的判定主要利用姿态信息或 ZMP 点位置信息, 但这样判断是不全面的。发明专利申请提出了基于多传感器检测仿人机器人跌倒状态的方法, 通过实时融合机器人步态阶段信息、姿态信息和 ZMP 点位置信息, 并利用模糊决策系统, 判定机器人当前的稳定性和可控性, 为机器人下一步动作提供参考。</p> <p>申请的权利要求</p> <p>一种基于多传感器信息仿人机器人跌倒状态检测方法, 其特征在于包含如下步骤:</p> <p>(1) 通过对姿态传感器信息、零力矩点 ZMP 传感器信息和机器人步行阶段信息进行融合, 建立分层结构的传感器信息融合模型, 从而实现仿人机器人稳定性判定;</p> <p>(2) 分别利用前后模糊决策系统和左右模糊决策系统来判定机器人在前后方向和左右方向的稳定性, 具体步骤如下:</p> | <p>[Example 7]</p> <p>A method for detecting a fall state of a humanoid robot based on information from a plurality of sensors</p> <p>Application summary:</p> <p>Existing methods for determining a fall state of a humanoid robot are mainly based on posture information or ZMP point position information, and such determining methods are not comprehensive. This invention patent application relates to a method for detecting a fall state of a humanoid robot based on a plurality of sensors. It determines present stabilities and controllability of the humanoid robot with a fuzzy decision system by fusing gait phase information, the posture information and the ZMP point position information of the humanoid robot in real time in order to provide a reference for a next action of the humanoid robot.</p> <p>Claims in the application:</p> <p>A method for detecting a fall state of a humanoid robot based on information from a plurality of sensors, characterized in comprising:</p> <p>(1) establishing a sensor information fusion model of a hierarchical structure by fusing posture sensor information, Zero Moment Point (ZMP) sensor information and robot walking phase information to determine stabilities of the humanoid robot;</p> <p>(2) determining stabilities in the anterior-posterior direction and the left-right direction of the humanoid robot with an anterior-posterior fuzzy decision system and a left-right fuzzy decision system, specifically comprising:</p> | |

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| <p>①根据机器人支撑脚和地面之间的接触情况与离线步态规划确定机器人步行阶段；</p> <p>②利用模糊推理算法对 ZMP 点位置信息进行模糊化；</p> <p>③利用模糊推理算法对机器人的俯仰角或滚动角进行模糊化；</p> <p>④确定输出隶属函数；</p> <p>⑤根据步骤①~步骤④确定模糊推理规则；</p> <p>⑥去模糊化。</p> <p>分析及结论</p> <p>对比文件 1 公开了仿人机器人的步态规划与基于传感器信息的反馈控制，并根据相关融合信息对机器人稳定性进行判断，其中包括根据多个传感器信息进行仿人机器人稳定状态评价，即对比文件 1 公开了发明专利申请的解决方案中的步骤（1），该解决方案与对比文件 1 的区别在于采用步骤（2）的具体算法的模糊决策方法。</p> <p>基于申请文件可知，该解决方案有效地提高了机器人的稳定状态以及对其可能跌倒方向判读的可靠性和准确率。姿态信息、ZMP 点位置信息以及步行阶段信息作为输入参数，通过模糊算法输出判定仿人机器人稳定状态的信息，为进一步发出准确的姿势调整指令提供依据。因此，上述算法特征与技术特征在功能上彼此相互支持、存在相互作用关系，相对于对比文件 1，确定发明实际解决的技术问题为：如何判断机器人稳定状态以及准确预测其可能的跌倒方向。上述模糊决策的实现算法及其应用于机器人稳定状态的判断均未被其它对</p> | <p>① _determining a walking phase of the humanoid robot based on contact situations between support feet of the humanoid robot and the ground and offline gait planning;</p> <p>② _implementing fuzzification of ZMP point position information by a fuzzy reasoning algorithm;</p> <p>③ _implementing fuzzification of a pitch angle or a roll angle of the humanoid robot by the fuzzy reasoning algorithm;</p> <p>④ _determining an output membership function;</p> <p>⑤ _determining a fuzzy reasoning rule based on steps ①-④;</p> <p>⑥ _implementing defuzzification.</p> <p>Analysis and conclusion:</p> <p>Reference document 1 discloses gait planning and feedback control based on sensor information of a humanoid robot, and determines stabilities of the humanoid robot based on related information that is fused, wherein the determination step includes evaluating a stable state of the humanoid robot based on information from a plurality of sensors. That is, Reference document 1 discloses step (1) in this solution, and this solution differs from Reference document 1 in the fuzzy decision method involving the specific algorithms in step (2).</p> <p>As can be seen from the application contents, this solution effectively improves the stable state of the humanoid robot and accuracy and reliability of determining possible fall directions of the humanoid robot. Taking the posture information, the ZMP point position information and the walking phase information as input parameters and outputting information for determining the stable state of the humanoid robot by fuzzy algorithms provides a basis for issuing an accurate posture adjustment command. Therefore, the above algorithm features have mutual supportive and interactive relations in function with the technical features. As compared with Reference document 1, the technical problem actually solved by this solution can be determined as how to determine the stable state of the humanoid robot and how to accurately predict the possible fall directions of the humanoid robot. Neither the above fuzzy decision algorithm nor the application thereof to determine the stable state of the humanoid</p> | |

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| 比文件公开，也不属于本领域公知常识，现有技术整体上并不存在使本领域技术人员改进对比文件1以获得要求保护发明的启示，要求保护的发明相对于最接近的现有技术是非显而易见的，具备创造性。 | robot is disclosed by any other Reference document or belongs to common sense in the art. There is no teaching for those skilled in the art to improve Reference document 1 to obtain the claimed invention, so the claimed invention is not obvious as compared with the closest prior art and thus possesses inventiveness. | |
| <p>【例 8】</p> <p>基于合作进化和多种群遗传算法的多机器人路径规划系统</p> <p>申请内容概述</p> <p>现有的多移动机器人运动规划控制结构通常采用集中式规划方法，该方法将多机器人系统视为一个具有多个自由度的复杂机器人，由系统中的一个规划器来统一完成对所有机器人的运动规划，其缺点在于计算时间较长，实用性不佳。发明专利申请提供了一种基于合作进化和多种群遗传算法的多机器人路径规划系统。机器人的每一条路径都采用一个染色体表示，将最短距离、平滑度、安全距离作为设计路径适应度函数的三个目标，通过 Messy 遗传算法对每个机器人的路径进行优化得到最佳路径。</p> <p>申请的权利要求</p> <p>一种基于合作进化和多种群遗传算法的多机器人路径规划系统，其特征在于：</p> <p>(1) 机器人的一条路径采用一个染色体表示，染色体就表示成节点的链表形式，即$[(x, y), time]$，$(x, y, time \in R)$，(x, y)表示机器人的位置坐标，$time$表示从前一个节点移动本节点需要的时间消耗，开始节点的$time$等于0，每个机器人个体的染色体除了初始节点的初始位置，结束节点的目标位置固定以外，中间节点和节点个数都是可变的；</p> | <p>[Example 8]</p> <p>A multi-robot path planning system based on cooperative co-evolution and a multigroup genetic algorithm</p> <p>Application summary:</p> <p>Existing multi-robot motion planning and control structures usually employ a centralized planning method. This method considers a multi-robot system as a complex robot having multiple degrees of freedom and uniformly implements motion planning for all robots by means of a planner in the multi-robot system, and its defect lies in relatively long computation time and poor practicability.</p> <p>This invention patent application relates to a multi-robot path planning system based on cooperative co-evolution and a multigroup genetic algorithm, wherein each path of a robot is represented by a chromosome, a shortest distance, smoothness and a safe distance are three targets for designing a path fitness function, and the path of each robot is optimized by a Messy genetic algorithm to obtain an optimal path.</p> <p>Claims in the application:</p> <p>A multi-robot path planning system based on cooperative co-evolution and a multigroup genetic algorithm, characterized in comprising:</p> <p>(1) representing a path of a robot by a chromosome, wherein the chromosome is expressed by a linked list of a node, i.e., $[(x,y), time]$, $(x, y, time \in R)$, (x, y) represents position coordinates of the robot, "time" represents the time taken to move from a previous node to the node, "time" of a start node equals to 0, and wherein for the chromosome of each robot, an initial position of an initial node and a target position of an end</p> | |

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| <p>(2) 每个机器人 Robot(i) 的路径 path(j) 的适应度函数表示成 $\phi(p_i, j)$:</p> $\ p_i, j\ = \text{Distance}(p_i, j) + w_s \times \text{smooth}(p_i, j) + w_t \times \text{Time}(p_i, j)$ <p>其中 $\ p_i, j\$ 是距离、平滑度和时间消耗的线性组合, w_s 是平滑加权因子, w_t 是时间加权因子; $\text{Distance}(p_i, j)$ 表示路径长度, $\text{smooth}(p_i, j)$ 表示路径的平滑度, $\text{Time}(p_i, j)$ 是路径 p_i, j 的时间消耗; 每个机器人采用所述适应度函数, 通过 Messy 遗传算法优化得到最优路径。</p> <p>分析及结论</p> <p>对比文件 1 公开了一种基于合作进化的多机器人路径规划方法, 其中采用自适应的混沌算法来获得最优路径。发明专利申请的解决方案与对比文件 1 的区别在于通过 Messy 遗传算法来实现多机器人路径规划。</p> <p>在该解决方案中, 采用适应度函数来约束 Messy 遗传算法, 经遗传算法优化后得到机器人的前进路径, 该解决方案的算法特征与技术特征在功能上相互支持、存在相互作用关系, 实现了对机器人前进路径的优化。相对于对比文件 1, 确定发明实际解决的技术问题为: 如何基于特定的算法使机器人以最优路径前进。对比文件 2 已经公开了包括混沌算法在内的多种遗传算法都可被用来进行路径优化, 采用 Messy 遗传算法可以解决其他算法的弊端, 从而获得更合理的优化结果。基于对比文件 2 给出的启示, 本领域技术人员有动机将对对比文件 1 与对比文件 2 结合得到发明专利申请的技术方</p> | <p>node are fixed and the intermediate nodes and the number of nodes are variable; □</p> <p>(2) expressing a fitness function of “path(j)” of each robot “Robot(i)” as $\phi(p_i, j)$: _</p> $\ p_i, j\ = \text{Distance}(p_i, j) + w_s * \text{smooth}(p_i, j) + w_t * \text{Time}(p_i, j),$ <p>wherein $\ p_i, j\$ is a linear combination of a distance, smoothness and a time consumption, “w_s” is a smoothness weighting factor, “w_t” is a time weighting factor, $\text{Distance}(p_i, j)$ represents a path length, $\text{smooth}(p_i, j)$ represents the smoothness of the path, and $\text{Time}(p_i, j)$ represents the time consumption of the path (p_i, j). Each robot optimizes the path with the fitness function by a Messy genetic algorithm.</p> <p>Analysis and conclusion:</p> <p>Reference document 1 discloses a multi-robot path planning method based on cooperative co-evolution, wherein an adaptive chaos algorithm is used to obtain an optimal path. This solution differs from Reference document 1 in implementing multi-robot path planning by the Messy genetic algorithm.</p> <p>In this solution, the fitness function is used to constrain the Messy genetic algorithm, and the final result of optimizing by the genetic algorithm is the path that the robot should advance toward. In this solution, the algorithm features have mutual supportive and interactive relations in function with the technical features, and the path that the robot should advance toward is optimized. As compared with Reference document 1, the technical problem actually solved by this solution can be determined as how to optimize the path that the robot should advance toward based on a specific algorithm. Reference document 2 discloses that multiple genetic algorithms including a chaos algorithm can be used for path optimization, a Messy genetic algorithm can be used to overcome disadvantages of other algorithms and thus obtain a more reasonable optimization result. Based on the teaching given by Reference document 2, those skilled in the art is motivated to combine Reference document 1 and Reference document 2 to obtain the technical solution of this invention patent application. Therefore, this solution is obvious as compared with the combination of</p> | |

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| 案。因此，要求保护的发明相对于对比文件 1 和对比文件 2 的结合是显而易见的，不具备创造性。 | Reference document 1 and Reference document 2 and thus does not possess inventiveness. | |
| <p>【例 9】 一种物流配送方法 申请内容概述</p> <p>在货物配送过程中，如何有效提高货物配送效率以及降低配送成本，是发明专利申请所要解决的问题。在物流人员达到配送地点后，可以通过服务器向订户用户终端推送消息的形式同时通知特定配送区域的多个订户用户进行提货，达到了提高货物配送效率以及降低配送成本的目的。</p> <p>申请的权利要求</p> <p>一种物流配送方法，其通过批量通知用户取件的方式来提高物流配送效率，该方法包括：</p> <p>当派件员需要通知用户取件时，派件员通过手持的物流终端向服务器发送货物已到达的通知；</p> <p>服务器批量通知派件员派送范围内的所有订户用户；</p> <p>接收到通知的订户用户根据通知信息完成取件；</p> <p>其中，服务器进行批量通知具体实现方式为，服务器根据物流终端发送的到货通知中所携带的派件员 ID、物流终端当前位置以及对应的配送范围，确定该派件员 ID 所对应的、以所述物流终端的当前位置为中心的配送距离范围内的所有目标订单信息，然后将通知信息推送给所有目标订单信息中的订户用户账号所对应的订户用户终端。</p> <p>分析及结论</p> | <p>[Example 9]</p> <p>A method for logistics distribution</p> <p>Application summary:</p> <p>The problem to be solved by this invention patent application is how to effectively improve distribution efficiency and reduce distribution cost in a logistics distribution process. After arriving at a delivery destination, a logistics personnel can notify, at the same time, a plurality of users in a specific distribution region to pick up parcels, by pushing messages to their user terminals via a server, by which, the objective of improving the distribution efficiency and reducing the distribution cost is realized.</p> <p>Claims in the application:</p> <p>A method for logistics distribution, which improves logistics distribution efficiency by notifying users in batches to pick up parcels, the method comprising:</p> <p style="padding-left: 2em;">when a dispatcher needs to notify users to pick up parcels, the dispatcher sends an arrival notification through a hand-held logistics terminal to a server;</p> <p style="padding-left: 2em;">the server sends notifications in batches to all users in a dispatching range of the dispatcher;</p> <p style="padding-left: 2em;">the users who receive the notifications pick up the parcels according to the notifications,</p> <p style="padding-left: 2em;">wherein, the server sends the notifications in batches by the following processing: determining information of all target orders corresponding to a dispatcher ID and within the dispatching range centered on current position of the logistics terminal, according to the dispatcher ID, a current position of the logistics terminal and the dispatching range carried in the arrival notification sent by the logistics terminal, and pushing the notifications to user terminals corresponding to user accounts in the information of all target orders.</p> | |

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| <p>对比文件 1 公开了一种物流配送方法，其由物流终端对配送单上的条码进行扫描，并将扫描信息发送给服务器以通知服务器货物已经到达；服务器获取扫描信息中的订货用户信息，并向该订货用户发出通知；接收到通知的订货用户根据通知信息完成取件。</p> <p>发明专利申请的解决方案与对比文件 1 的区别在于批量通知用户订货到达，为实现批量通知，方案中服务器、物流终端和用户终端之间的物理架构和数据通信均做出了相应调整，因此，取件通知规则和具体的批量通知实现方式在功能上彼此相互支持、存在相互作用关系。相对于对比文件 1，确定发明实际解决的技术问题是如何提高订单到达通知效率进而提高货物配送效率。从用户角度来看，用户可以更快地获知订货到达情况的信息，也提高了用户体验。由于现有技术并不存在对上述对比文件 1 做出改进从而获得发明专利申请的解决方案的技术启示，该解决方案具备创造性。</p> | <p>Analysis and conclusion:</p> <p>Reference document 1 discloses a method for logistics distribution, wherein a logistics terminal scans a bar code on a distribution sheet and sends the scanned information to a server to notify the server that a parcel has arrived; the server obtains information of a user from the scanned information and sends a notification to the user; the user picks up the parcel based on information in the notification upon receiving the notification. The solution of this invention patent application differs from Reference document 1 in sending the notifications to the users in batches. In order to send the notifications in batches, physical architectures and data communications among the server, the logistics terminals and the user terminals are correspondingly adapted, so notification rules for picking up parcels and concrete implementation manners of notifying in batches have mutual supportive and interactive relations in function. As compared with Reference document 1. The technical problem actually solved by this invention can be determined as how to improve the efficiency of sending the arrival notifications and thus improve the logistics distribution efficiency. From the perspective of the user, the user can quickly obtain the arrival information of parcels, so user experience is improved as well. As in the prior art, there is no teaching of altering the solution of Reference document 1 to obtain the solution of this invention patent application, conclusion can be made that it possesses inventiveness.</p> | |
| <p>【例 10】 一种动态观点演变的可视化方法 申请内容概述</p> <p>近年来人们越来越多地通过社交平台发表他们的意见和想法，人们在社交平台上发表的带有情感的内容反映了人们观点的演变，并可以由此看出事件的发展、变化和趋势。发明专利申请通过自动采集社交平台人们发表的信息并对其中的情感进行分析，通过计算机</p> | <p>[Example 10]</p> <p>A method for visualizing evolution of dynamic views</p> <p>Application summary:</p> <p>In recent years, people are increasingly expressing their opinions and ideas through social platforms. Perceptual contents expressed by people on the social platforms reflect evolution of their views, from which, developments, changes and trends of an event can be obtained. This invention patent application facilitates people better understanding intensity changes and evolution trends over time of emotions by automatically collecting information</p> | |

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| <p>绘制情感可视化图来帮助人们更好地理解情感在不同时间的强度变化和随时间而演变的趋势。</p> <p>申请的权利要求</p> <p>一种动态观点演变的可视化方法，所述方法包括：</p> <p>步骤 1) 由计算设备确定所采集的信息集合中信息的情感隶属度和情感分类，所述信息的情感隶属度表示该信息以多大概率属于某一情感分类；</p> <p>步骤 2) 所述情感分类为积极、中立或消极，具体分类方法为：如果点赞的数目 p 除以点踩的数目 q 的值 r 大于阈值 a，那么认为该情感分类为积极，如果值 r 小于阈值 b，那么认为该情感分类为消极，如果值 $b \leq r \leq a$，那么情感分类为中立，其中 $a > b$；</p> <p>步骤 3) 基于所述信息的情感分类，自动建立所述信息集合的情感可视化图形的几何布局，以横轴表示信息产生的时间，以纵轴表示属于各情感分类的信息的数量；</p> <p>步骤 4) 所述计算设备基于所述信息的情感隶属度对所建立的几何布局进行着色，按照信息颜色的渐变顺序为各情感分类层上的信息着色。</p> <p>分析及结论</p> <p>对比文件 1 公开了一种基于情感的可视化分析方法，其中时间被表示为一条水平轴，每条色带在不同时间的宽度代表一种情感在该时间的度量，用不同的色带代表不同的情感。</p> <p>发明专利申请的解决方案与对比文件 1 的区别在于步骤 2) 中设定的情感的具体分类规则。从申请内</p> | <p>expressed by people on the social platforms and analyzing emotions therein and then drawing an emotion visualization graph by a computer.</p> <p>Claims in the application:</p> <p>A method for visualizing evolution of dynamic views, characterized in comprising:</p> <p>step 1), determining by a computing device an emotional subordination degree and an emotion classification of information in a set of collected information, wherein the emotional subordination degree of the information represents a possibility that the information belongs to the emotion classification;</p> <p>step 2), determining the emotion classification as positive, neutral or negative, wherein: the emotion classification is determined as positive if a resulting value “r” of dividing the number “p” of likes by the number “q” of dislikes is larger than a threshold value “a”, the emotion classification is determined as negative if the resulting value “r” is less than a threshold value “b”, and the emotion classification is determined as neutral if $b \leq r \leq a$, wherein $a > b$;</p> <p>step 3), automatically establishing a geometric layout of an emotion visualization graph of the set of collected information based on the emotion classification of the information, wherein a horizontal axis represents the time of the information being produced, and a vertical axis represents the amount of information belonging to respective emotion classifications;</p> <p>step 4), rendering by the computing device the established geometric layout based on the emotional subordination degree of the information, wherein the information on respective emotion classification layers is rendered according to the gradient colors corresponding to the information.</p> <p>Analysis and conclusion:</p> <p>Reference document 1 discloses a visualization analysis method based on emotions, wherein time is represented by a horizontal axis, and a width of each color stripe at different time represents</p> | |

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| <p>容中可以看出，即使情感分类规则不同，对相应数据进行着色处理的技术手段也可以是相同的，不必作出改变，即上述情感分类规则与具体的可视化手段并非功能上彼此相互支持存在相互作用关系。与对比文件 1 相比，发明专利申请只是提出了一种新的情感分类的规则，没有实际解决任何技术问题，也没有针对现有技术作出技术贡献。因此，要求保护的发明相对于对比文件 1 不具备创造性。</p> | <p>a metric of an emotion at the time, and different emotions are represented by different color stripes. The solution of this invention patent application differs from Reference document 1 in the specific rule for emotion classification defined in step 2). As can be seen from the application contents, even if the rule for emotion classification is different, the technical means for rendering corresponding data can be the same without needing any change. That is, the above rule for emotion classification and the specific visualization means do not have any mutual supportive and interactive relation in function. As compared with Reference document 1, the solution of this invention patent application merely proposes a new rule for emotion classification, and does not actually solve any technical problem or make any technical contribution to the prior art. Therefore, the invention as claimed does not possess inventiveness as compared with Reference document 1.</p> | |
| <p>6.3 说明书及权利要求书的撰写</p> | <p>6.3 Drafting of description and claims</p> | |
| <p>6.3.1 说明书的撰写</p> <p>包含算法特征或商业规则和方法特征的发明专利申请的说明书应当清楚、完整地描述发明为解决其技术问题所采用的解决方案。所述解决方案在包含技术特征的基础上，可以进一步包含与技术特征功能上彼此相互支持、存在相互作用关系的算法特征或商业规则和方法特征。</p> <p>说明书中应当写明技术特征和与其功能上彼此相互支持、存在相互作用关系的算法特征或商业规则和方法特征如何共同作用并且产生有益效果。例如，包含算法特征时，应当将抽象的算法与具体的技术领域结合，至少一个参数的定义应当与技术领域中的具体数据对应关联起来；包含商业规则和方法特征时，应当对解决技术问题的整个过程进行详细描述和说明，使得所属</p> | <p>6.3.1 Drafting of description</p> <p>The description of an invention patent application containing features of algorithm or business rule and method should clearly and completely describe a technical solution that is employed to solve a technical problem thereof. On the basis of including technical features, the technical solution may further contain features of algorithm or business rule and method, wherein, the features of algorithm or business rule and method and the technical features should have mutual supportive and interactive relations in function.</p> <p>The description should describe how the technical features and the features of algorithm or business rule and method that have mutual supportive and interactive relations in function with the technical features interact and thus produce advantageous effects. For example, when a feature of algorithm is contained, a specific technical field shall be combined with the abstract algorithm and definitions of at least parameters in the algorithm should be correspondingly correlated with specific data in the specific technical field; when a feature of business rule and method is contained, the whole process of solving the technical problem should be described and explained in detail, such that one person skilled in the art can implement the</p> | <p>AIPLA welcomes the proposed clarification for drafting patent specifications directed to algorithms, business rules and method feature. However, AIPLA respectfully requests clarification of the term “specific application field” in this section as discussed above in AIPLA’s comments to Section 6.1.3 (Examination of novelty and inventiveness) as well as Example [3] above.</p> |

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| <p>技术领域的技术人员按照说明书记载的内容，能够实现该发明的解决方案。</p> <p>说明书应当清楚、客观地写明发明与现有技术相比所具有的有益效果，例如质量、精度或效率的提高，系统内部性能的改善等。如果从用户的角度而言，客观上提升了用户体验，也可以在说明书中进行说明，此时，应当同时说明这种用户体验的提升是如何由构成发明的技术特征，以及与其功能上彼此相互支持、存在相互作用关系的算法特征或商业规则和方法特征共同带来或者产生的。</p> | <p>technical solution of the invention based on the contents recited in the description.</p> <p>The description should clearly and objectively describe advantageous effects of the invention as compared with the prior art, for example, improvement of quality, accuracy or efficiency, improvement of intra-system performance and so on. It can also be described in the description that from the perspective of a user, user experiences are improved. Meanwhile, it should also be described how improvements of user experiences are produced or brought about by both the technical features and the features of algorithm or business rule and method that have mutual supportive and interactive relations in function with the technical features, both of which constitute the invention.</p> | |
| <p>6.3.2 权利要求书的撰写</p> <p>包含算法特征或商业规则和方法特征的发明专利申请的权利要求应当以说明书为依据，清楚、简要地限定要求专利保护的范围。权利要求应当记载技术特征以及与技术特征功能上彼此相互支持、存在相互作用关系的算法特征或商业规则和方法特征。</p> | <p>6.3.2 Drafting of claims</p> <p>The claims of an invention patent application containing features of algorithm or business rule and method should clearly and concisely define scopes as claimed therein, on the basis of the description. The claims should recite technical features and features of algorithm or business rule and method that have mutual supportive and interactive relations in function with the technical features.</p> | <p>AIPLA welcomes the proposed clarification for drafting patent claims directed to algorithms, business rules and method features.</p> |