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Inventor

Name	Address	Country
Dr. B Uma Maheswari	Associate Professor, Department of Computer Science and Engineering, St. Joseph's College of Engineering, OMR, Chennai, Pin: 600119	India
Dr.Gandi Satyanarayana	Professor, Department of Computer Science & Engineering, Raghu Engineering College, Visakhapatnam - 531162	India
Alabazar Ramesh	Assistant Professor, Department of Computer Science and Engineering, B V Raju Institute of Technology, Narsapur, Medak, Telangana, India Pin: 502313	India
S Sandeep Kumar	Assistant Professor, Department of CSE, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur district-522502	India
S.Sangeetha	Assistant Professor, Department of Information Technology, Kongunadu College of engineering and technology, Thottiam, Trichy -621215	India
Dr. Jayapandian N	Associate Professor, Department of Computer Science and Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Kengeri Campus, Bangalore - 560074	India
Dr. V. Mohanavel	Associate Professor, Centre for Materials Engineering and Regenerative Medicine, Bharath Institute of Higher Education and Research, Chennai - 600073, Tamilnadu, India	India

Applicant

Name	Address	Country
Dr. B Uma Maheswari	Associate Professor, Department of Computer Science and Engineering, St. Joseph's College of Engineering, OMR, Chennai, Pin: 600119	India
Dr.Gandi Satyanarayana	Professor, Department of Computer Science & Engineering, Raghu Engineering College, Visakhapatnam - 531162	India
Alabazar Ramesh	Assistant Professor, Department of Computer Science and Engineering, B V Raju Institute of Technology, Narsapur, Medak, Telangana, India Pin: 502313	India
S Sandeep Kumar	Assistant Professor, Department of CSE, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur district-522502	India
S.Sangeetha	Assistant Professor, Department of Information Technology, Kongunadu College of engineering and technology, Thottiam, Trichy -621215	India
Dr. Jayapandian N	Associate Professor, Department of Computer Science and Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Kengeri Campus, Bangalore - 560074	India
Dr. V. Mohanavel	Associate Professor, Centre for Materials Engineering and Regenerative Medicine, Bharath Institute of Higher Education and Research, Chennai - 600073, Tamilnadu, India	India

Abstract:

The present invention relates to the field of convolutional neural network system. The invention more particularly relates to a convolutional neural network system for behavioural state classification between two species. A convolutional neural network system for behavioural state classification between two species, includes a conv neural network module comprising three building blocks but not limited to a convolutional block, a pooling block, and a fully connected block; one or more processor one or more graphics multiprocessors; a memory to store data including data relating to one or more convolutional neural networks (CNNs) and instructions to provi machine learning framework; a library of machine learning primitives to operations to optimize a machine learning model; and wherein a machine learning framewor a trained convolutional neural network (CNN) model having an associated list of instructions to generate a processed CNN model. Accompanied Drawing [FIG. 1]

Complete Specification

Description:[001] The present invention relates to the field of convolutional neural network system. The invention more particularly relates to a convolutional neural network system for behavioural state classification between two species.

BACKGROUND OF THE INVENTION

[002] The following description provides the information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[003] Convolutional neural networks (CNNs), a type of machine learning computer vision model, have the potential to be a useful tool for automatically classifying (identifying) animal species in large numbers of images. Moreover, CNN is a deep learning model for processing data with a grid pattern, such as images, that is insp the organisation of animal visual cortex and designed to learn spatial hierarchies of features automatically and adaptively, from low- to high-level patterns. CNN is a mathematical construct made up of three types of layers (or building blocks): convolutional, pooling, and fully connected. The first two layers, convolution and pooli extract features, and the third, a fully connected layer, maps the extracted features into final output, such as classification. A convolution layer is essential in CNN, w made up of a stack of mathematical operations such as convolution, a type of linear operation. Pixel values are stored in a two-dimensional (2D) grid, i.e., an array of numbers, in digital images, and a small grid of parameters called kernel, an optimizable feature extractor, is applied at each image position, making CNNs highly eff for image processing because a feature can occur anywhere in the image. Extracted features can become hierarchically and progressively more complex as one laye its output into the next layer. Training is the process of optimising parameters such as kernels in order to minimise the difference between outputs and ground trut using optimization algorithms such as backpropagation and gradient descent, among others.

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