**SYSTEM DESIGN**

**SYSTEM ARCHITECTURE:**

Convolutional Neural Network (CNN)

Image Dataset

Performance Analysis and Graph

Predicted Results: Expression Class

**DATA FLOW DIAGRAM:**

1. The DFD is also called a bubble chart. It is a simple graphical formalism that can be used to represent a system in terms of input data to the system, various processing carried out on this data, and the output data generated by this system. The data flow diagram (DFD) is one of the most important modeling tools. It is used to model the system components. These components are the system process, the data used by the process, an external entity that interacts with the system, and the information flows in the system.
2. DFD shows how the information moves through the system and how it is modified by a series of transformations. It is a graphical technique that depicts information flow and the transformations that are applied as data moves from input to output. A DFD is also known as a bubble chart. A DFD may be used to represent a system at any level of abstraction. DFD may be partitioned into levels that represent increasing information flow and functional detail.

Input image Dataset

Preprocessing

Training dataset

Model: Convolutional Neural Network (CNN)

**|**

Testing Data

Prediction/Classification

Predicted Result: Expression Class

**UML DIAGRAMS**

* UML stands for Unified Modeling Language. UML is a standardized general-purpose modeling language in the field of object-oriented software engineering. The standard was managed and created by the Object Management Group. The goal is for UML to become a common language for creating models of object-oriented computer software. In its current form, UML is comprised of two major components: a Meta-model and a notation. In the future, some form of method or process may also be added to, or associated with, UML.

**GOALS:**

**The Primary goals in the design of the UML are as follows:**

1. Provide users with a ready-to-use, expressive visual modeling Language so that they can develop and exchange meaningful models. Provide extensibility and specialization mechanisms to extend the core concepts. Be independent of particular programming languages and development processes. Provide a formal basis for understanding the modeling language. Encourage the growth of the OO tools market. Support higher-level development concepts such as collaborations, frameworks, patterns, and components. Integrate best practices.

**USE CASE DIAGRAM:**

A use-case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. The roles of the actors in the system can be depicted.

**CLASS DIAGRAM:**

In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, attributes, operations (or methods), and the relationships among the classes. It explains which class contains information.

Input

Dataset Acquisition

Input image Dataset

Preprocessing ( )

Output

Features extraction

Classification

Finally get Classified & Display Result ( ) : Expression Class

**SEQUENCE DIAGRAM:**

A sequence diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.

Image Dataset

Testing

Training

Input image dataset

Send the data to training stage

Pre-processing

Train the image

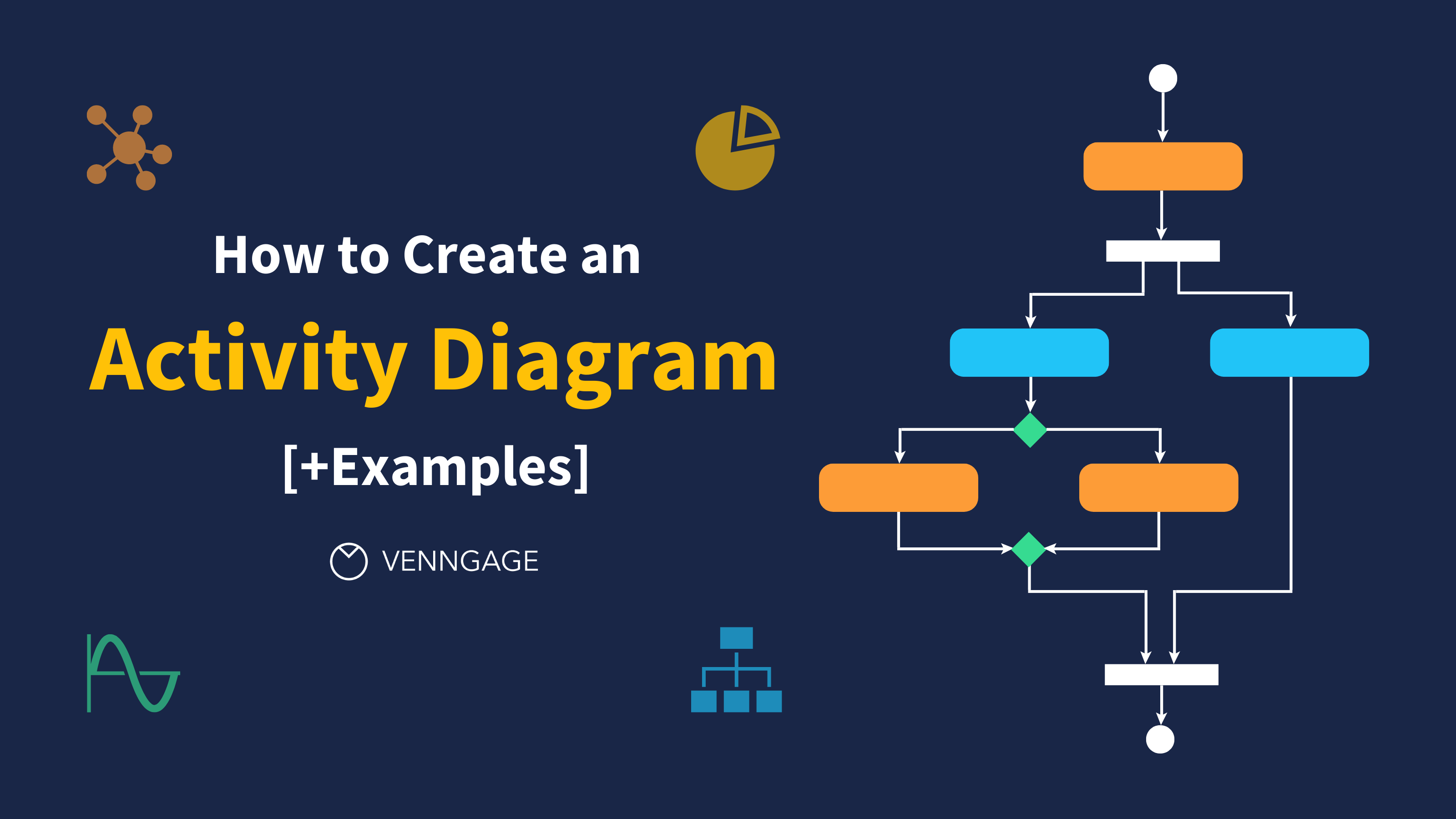
Extracted feature and send to testing stage

Give input test image

Predict the type using proposed algorithm

**ACTIVITY DIAGRAM:**

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration, and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and



Input Dataset

Preprocessing

Training

Model: Convolutional Neural Network (CNN)

Predicted Results: Expression Class

operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

