



भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

TEQIP SUMMER INTERNSHIP 2018



“COVOLUTIONAL NEURAL NETWORK”

GUIDED BY

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- **NAME: SHWETA**
- **BRANCH: ELECTRICAL ENGINEERING**
- **YEAR: 3RD YEAR**
- **COLLEGE: GOVERNMENT ENGINEERING COLLEGE,
JAGDALPUR**
- **FACULTY ADVISOR AT IITH: DR. AMIT ACHARYYA**
- **GUIDED BY: DR. CHANDRAJIT PAL**
- **LAB: ADVANCED EMBEDDED SYSTEM IC DESIGN LAB (AESICD)**
- **RESEARCH TOPIC: CONVOLUTIONAL NEURAL NETWORK AND
ITS IMPLEMENTATION**
- **DURATION: 1 MONTH**

CONVOLUTION NEURAL NETWORK

- In machine learning, a **convolutional neural network** is a class of deep, feed-forward artificial neural networks, most commonly applied to analyzing visual imagery.
- A convnet takes an image expressed as an array of numbers, applies a series of operations to that array and, at the end, returns the probability that an object in the image belongs to a particular class of objects
- In order to achieve the functionality we talked about, Convolutional Neural Network processes image through several layers. let's just do an overview of them and their purposes:
 - Convolutional Layer – Used to detect features
 - ReLU Layer – Introducing non-linearity to the system
 - Pooling (Downsampling) Layer – Reduces the number of weights and controls overfitting
 - Fully Connected Layer – Standard Neural Network used for classification
- Basically, in the end, Convolutional Neural Network uses standard Neural Network for solving classification problem, but it uses other layers to prepare data and detect certain features before that

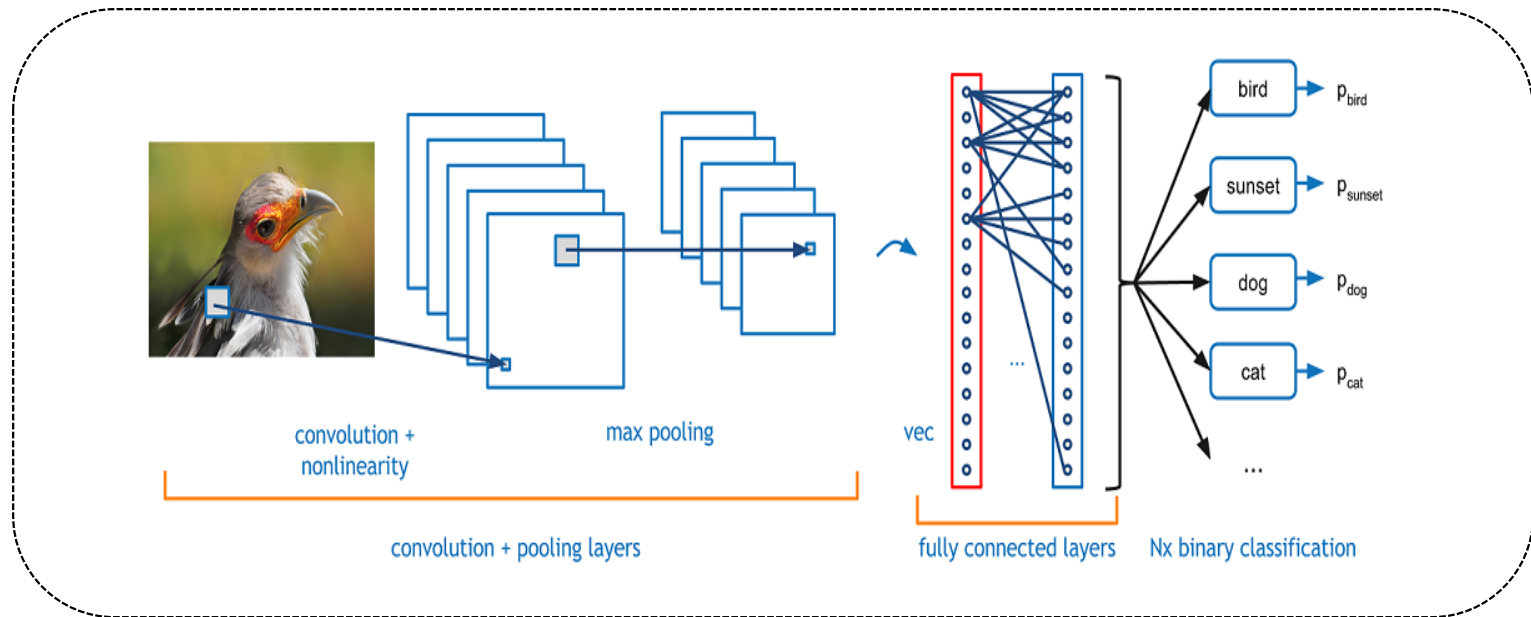


FIG. ARCHITECTURE OF CONVOLUTION NEURAL NETWORK

- The performance of deep convolution neural networks can be further enhanced with the expansion of the training data set.
- Data augmentation is a method by which you can virtually increase the number of samples in your dataset using data you already have.
- For image augmentation, it can be achieved by performing geometric transformations, changes to color, brightness, contrast or by adding some noise.

CONCLUSION

Thus, we infer from our studies that neural networks is in its budding stage. We look forward for more efficient algorithms that is applicable in day to day life.

FINAL OUTCOME

- Learnt about convolutional neural networks.
- Visualized how deep neural networks are used for image classification.
- Successfully read the research papers related to convolutional neural network and deep learning.