23-9-25

Build a CNN Model to classify cat or dog image

AIM: To implement CNN to build a CNN model to classify a cat or dog image.

Pseudo Code

- Initialize parameters
- Define input of shape = [64, 64, 3] → image resolution chosen for uniformity
- Define no. of classes = 2
- Set batch size 1.R

- Load dataset
- Import cat & dog image from dataset.
- Preprocess - resize all image to same dimension
- Normalize pixel values [0, 1], to stabalize training
- split into training and validation set.

- Data Augmentation
  Apply random flips, rotation, zooms.
- construct CNN architecture.
- convolution layer
- Activation ReLU
- Pooling layer
- Repeat convolution + Pooling

- Compare Model
- Optimize
  Loss funct
  Evaluation metric - Accuracy.
  Train Model
  Evaluate Model
  Calculate accuracy & loss on validation set

Prediction

For a new image:

Resize to (64, 64)

Normalize pixel

Passing

If output < 0.5 → cat Else → dog.

Observation

Training accuracy improved

Validation accuracy peaked 80 - 85 %.

Loss decreased significantly confirming effective feature learning from CNN

Result:

The experiment was successfully executed.

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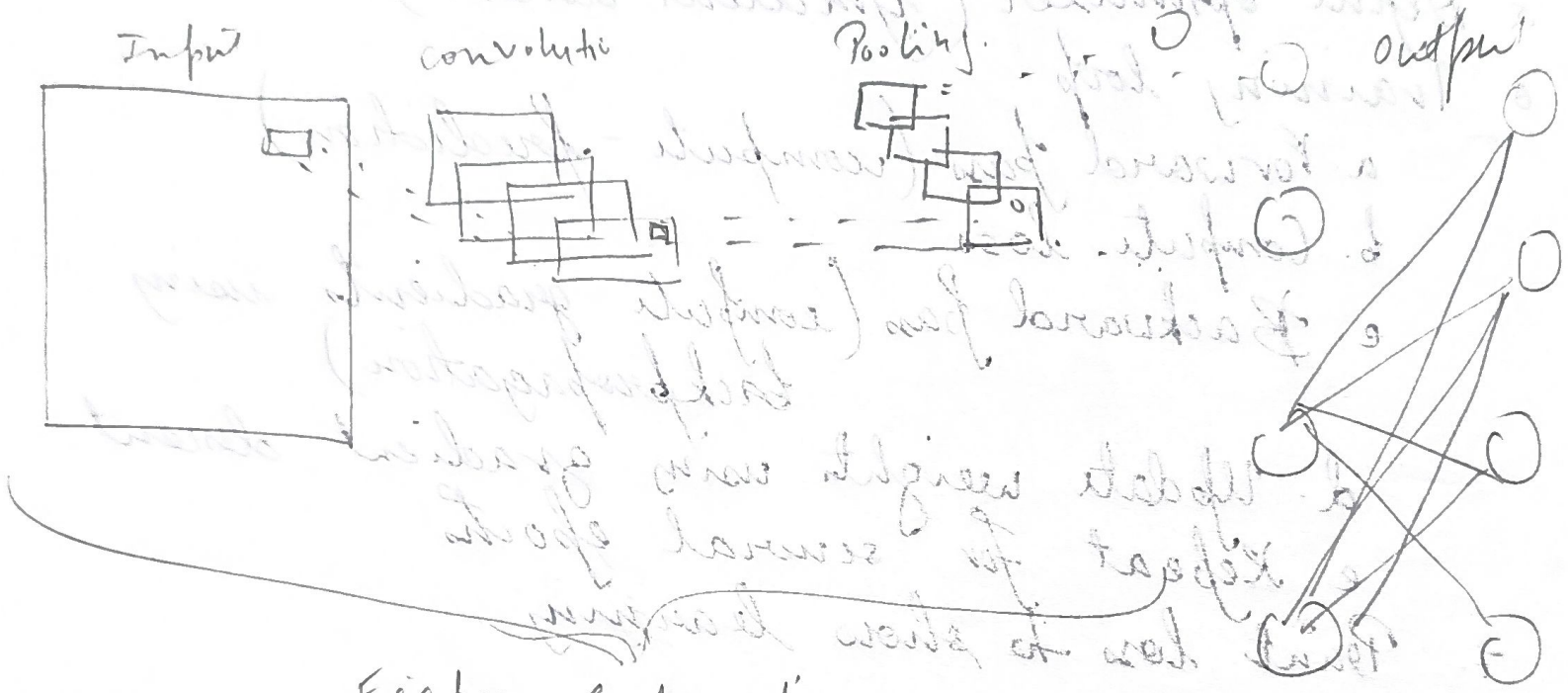
Input
convolutio
Pooling
outpu
Feature Extraction
classificatio

O/P :

Epoch 1 - loss : 208.7533 - Acc : 0.64
Epoch 2 - loss : 195.6160 - Acc : 0.67
Epoch 3 - Loss : 181.9068 - Acc : 0.69
Epoch 4 - Loss : 171.0776 - Acc : 0.69
Epoch 5 - Loss : 180.1082 - Acc : 0.70